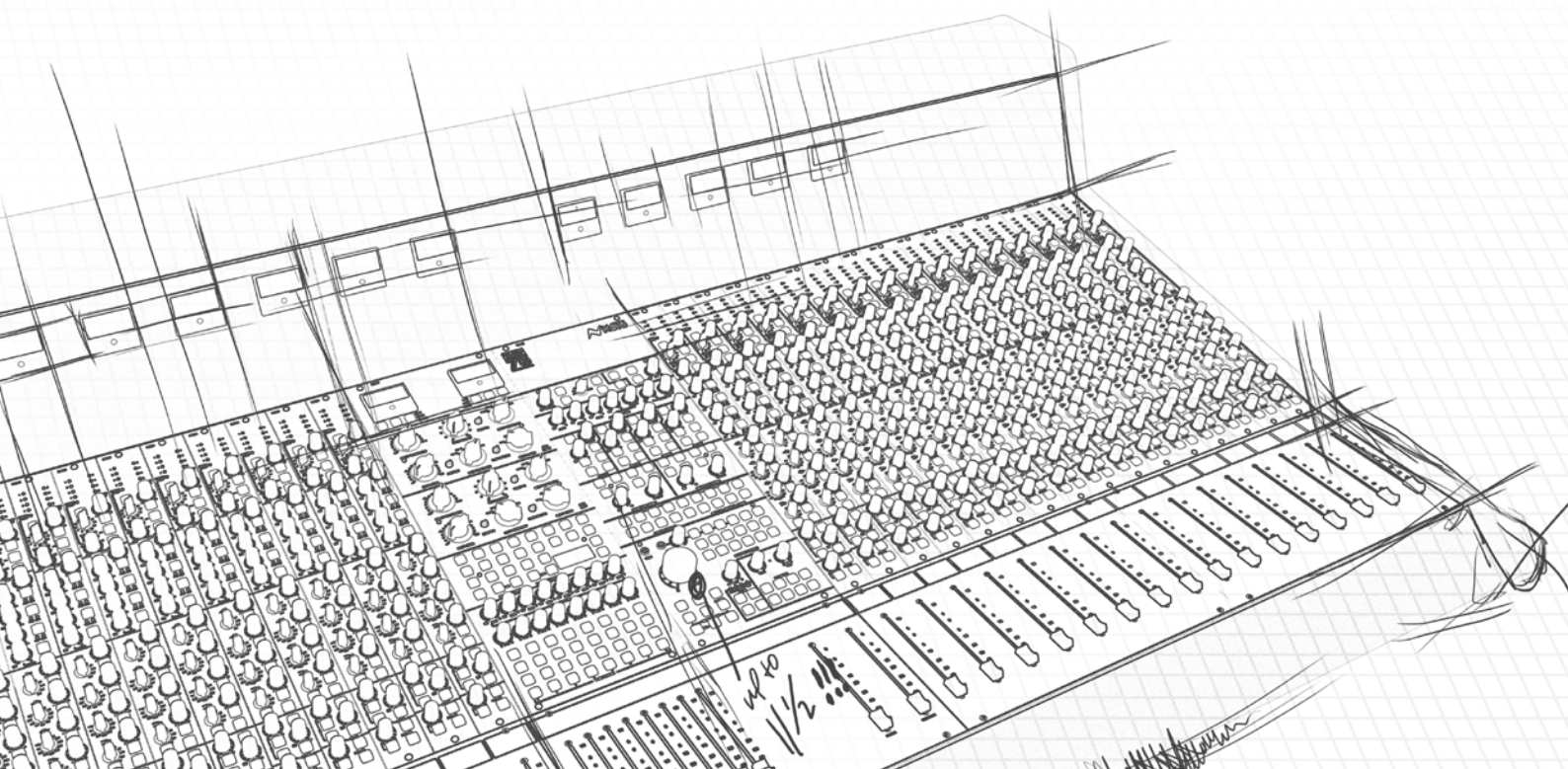


CUSTOM SERIES 75

www.customseries75.com



OWNER'S MANUAL



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Introduction

With the release of the 1073 mic preamp/EQ in 1970, and the 1081 released in 1973, Neve's classic circuitry has consolidated their position in the professional audio industry. Since then, a desire for "cleaner" recordings using modern circuitry has resulted in classic circuitry becoming an option – but not the only option.

The development of technology and the digital world cannot be ignored.

With these two mindsets clear, the Custom Series 75 has achieved a world first, the combination of classic circuitry and modern circuitry in one console.

The classic Neve circuitry has been painstakingly re-created, keeping faithful to the original whilst taking advantage of modern assembly methods. The original circuits have only been changed where justified by an improvement in reliability or performance. Rather than running the length of the console, the voltage summing busses are a mere 150mm long and they are now balanced, resulting in lower noise and less crosstalk. Other "charming quirks" of the original circuits such as the level onto busses varying as more busses are assigned from a channel, have been overcome. Improved BA338 amplifying stages and legendary BA283 output stages combined with classic Neve LO1166 output transformers, sound warm, defined and punchy.

Stereo busses are implemented in both classic (voltage summing) and modern (current summing) technology and the feed to these can be

selected on a per-channel basis. The 2 busses are combined at the Main Mix Fader then passed via (patchable) 2254 compressors and an insert, to the stereo outputs. There are both modern (transformerless) and classic (transformer) outputs, providing maximum flexibility of sonic "flavour". Naturally the AFL busses are also replicated for correct Solo monitoring. The eight Group outputs use classic circuitry, with the added bonus of Stem outputs, inserts and 8 dedicated faders to feed groups or playback to the stereo busses. A 32 channel console can mix a total of 80 inputs to stereo.

The 2081 inline channel module features a blend of the best features of Neve's legendary 1073 and 1081 modules. The mic preamp and 4 band EQ is straight from the 1081, while the output amp is based on the 1970's BA283, single ended, class A circuitry with a gapped core transformer, as used in the 1073 and 2254. Five auxiliary sends, fader swap and a choice of either classic or modern channel output circuitry are provided.

Two 2254 compressors, four stereo reverb returns, eight recallable scenes, monitoring of up to 12 sources simultaneously and comprehensive 7.1 monitoring are just some of the features found in the master section.

Available in a 16, 24, 32, 40, 48, 56 or 64 module chassis, the Series 75 is flexible and able to suit a variety of studio

applications from broadcast to music and even film production.

Designed specifically for longevity, gold plated switches and connectors have been used for all audio circuits, and all parts have been selected on their projected availability many years from now. All capacitors in the signal path are polypropylene film or Rubycon ZLH series electrolytic, chosen for superb sonic performance and long life. Ergonomic design allowing the engineer to reach any parameter on the board from a seated position (up to 32 Channels) make this console a workstation that is comfortable for long hours, flexible for countless practical and creative applications, and unbeatable for sonic character *or* transparency!

The *Custom Series 75* is a console that is here to stay.



About This Manual

This manual is designed as a quick reference for owners of the *Custom Series 75* console, not to be read cover to cover, but as an accompaniment helping you to get to know your new console. Important terms can be found in **bold** allowing you to skim through to the exact section on a page that is relevant.

** There are several functions in the console for which the hardware is present, but software not implemented. This means some functions on your console will be non-operational until we release the next software version. These functions have been marked with a ** throughout this manual.

Terminology

Extensive use of terminology, of which we feel it necessary to define before continuing, is used throughout this manual. Make sure you are familiar with this before continuing. The glossary located at the end of the manual may also assist!

Module - To avoid confusion between a Channel and the Channel path, 'Module' has been used instead to distinguish the physical modules that contain both the Channel path and Monitor path.

DAW - Digital Audio Workstation.

Bus - A summing point for all signals routed to the same place. All busses in the Series 75 are balanced lines to a particular destination (e.g. 'Stereo Local Mix Bus' picks up all signals routed from Channels and takes them to the Main Mix).

Voltage Summing - In the 1970s Voltage Summing was the only way to sum multiple signals onto a bus. Put simply, the signal level on the mix bus drops as more signals are fed to it, typically to around -30dBu. Further, the mix bus must be designed from the outset to have a fixed number of sources, and the impedance and bus level depends on this not changing. The signal passes through an input transformer and amplifying stage – the "mix amp". This input transformer will subtly colour the signal. Once the signal passes through the mix amp it hits an output transformer. The output transformer is where much of the sonic colour comes from. In effect, a Voltage Summing Mix Bus colours the audio in a way that is pleasing to our ear.

Current Summing - Current Summing is a modern solution to the 'deficiencies' of Voltage Summing. No matter how many signals you feed to the mix bus of a Current Summing circuit, the voltage on the bus will remain at 0 Volts. We call this a "Virtual Earth" - the inverted op-amp output voltage is 'fed back' to the virtual earth point via a feedback resistor, resulting in 0V at the op-amp input. A more sophisticated variant of this circuit is used to achieve balanced virtual earth mixing as used

in this console. Due to the virtual earth, this design does not require an input or output transformer. A Current Summing Mix Bus does not colour the audio.

Quickstart

If you don't want to read the complete manual, you can start with the most important sections below:

- » **Installation:**
http://www.customseries75.com/pdf/health_safety_installation_connections.pdf
- » **Power Up Procedure:**
<http://www.customseries75.com/pdf/operation.pdf>
- » **Master Section:**
http://www.customseries75.com/pdf/master_section.pdf
- » **Channel Strip:**
http://www.customseries75.com/pdf/2081_module.pdf

This will give you a starting point from which you can come back and print out sections that you are interested in.

Can I download the complete manual?

Yes, the manual can be downloaded at http://www.customseries75.com/pdf/customseries75_manual.pdf

Installation

On the rear panels of the Custom Series 75 you will find the input and output connections on a combination of DB25, TRS and XLR connectors. The wiring diagrams for each connector can be found in the Wiring Diagrams section of this manual.

The following section details the console connections.

Health & Safety

When initially setting up the Custom Series 75 console there are a number of health and safety aspects which must be considered. See the H & S document provided with the console when delivered for in depth information, and observe the following at all times.

- » Make sure the power supply and interfaces are switched off, and have been off for at least 1 minute, before connecting/disconnecting power to the console.
- » Be aware that it is unsafe to expose the console directly to liquid. Position the console away from air conditioners that may drip water unexpectedly. It is also not recommended to house water, i.e., in a vase, on or in close proximity to the console.
- » In the unlikely event of the console failing to operate due to an internal issue, contact the supplier immediately for instructions on how to proceed. Alternatively, navigate to 'Contact Us' on the Series 75 website (<http://www.customseries75.com>), or have the console professionally serviced at one of our service centres (details on our website).

Connections

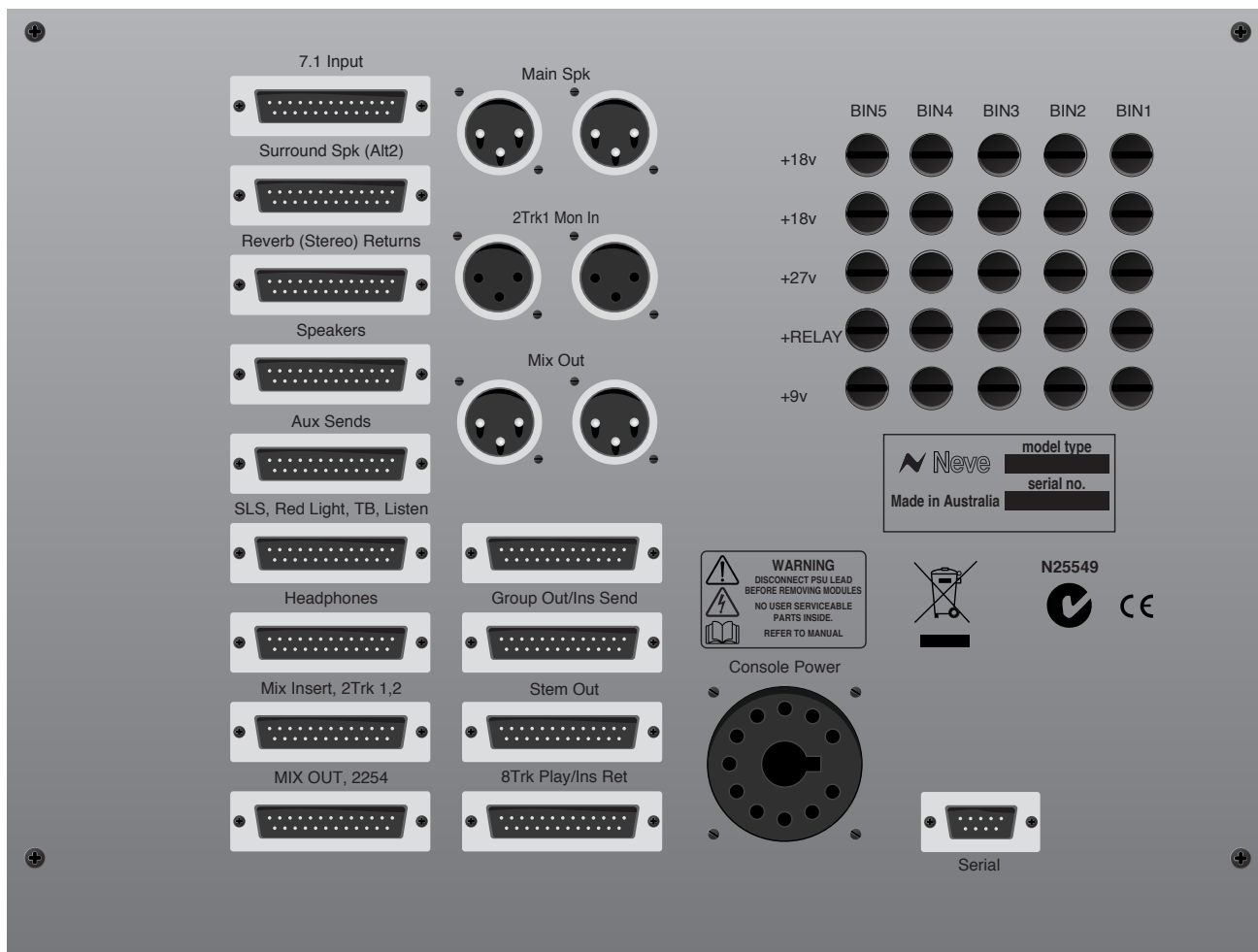
Countless input and output options, not all of which will apply to any one studio setup, can be found on the *Series 75*. It is recommended that you read this section of the manual thoroughly, decide exactly which features will be utilised in your studio, then purchase the cabling necessary to get the most out of your console.

A patch bay simplifies the connection of external devices and can be made to order, however is not necessary. Available in 24, 32, 40 or 56 point layouts, the patch bay is a 19" panel that resides in a specially designed Channel bin on either the left or right side of the console. Patch points are terminated to DB25 connectors on the rear of the patch bay for easy connection of console inputs/outputs and external devices.

The size of your studio setup will be the major factor when considering cabling. Individual pre-made cables are easily purchased and may be a time saving option.

Make sure the power supply and interfaces are switched off, and have been off for at least 1 minute, before connecting or disconnecting power.

Master Section Rear Panel



Connectors for the **Main Spk L & R** and **Mix Out** can be found on both XLRs and DB25. It is recommended that the DB25 connectors be used. The XLRs may come in handy for guests who prefer to supply their own monitors, or if a 2 track recording of a mix on a portable device is desired.

The **2Trk1 Mon In** is an external input to the Control Room monitor section (2T1). Available on both DB25 and XLR for convenience.

7.1 Input

DAW outputs or a device containing up to 8 outputs may be connected here; the **7.1 Input** feeds the Control Room monitor section and can be selected here in order to monitor up to 8 channel surround sound via the Surround Spk (Alt 2) outputs.

Surround Spk (Alt 2)

Up to 8 surround monitors can be connected here. When Alt 2 is selected as the monitor source in the Control Room section, the group cuts and solos will effect the eight individual speaker outputs. Note that a third set of stereo monitors could be connected here if surround monitoring is not desired.

Reverb (Stereo) Returns

These inputs feed the four stereo Reverb Returns. Naturally, the output of outboard effects, a patch bay, or XLR connectors could be wired here.

Speakers

Carries the Main Speaker Outputs, Alt 1 and Monitor Mix Output signals. In an ideal world, the Main Speaker Outputs and Monitor Mix Outputs will be connected to the main studio speakers. Alt 1 would be connected to your secondary studio monitors.

Aux Sends

All 7 auxiliary sends (1, 2, 3, A[stereo] and B[stereo]) appear here. Connect these to your patch bay, XLRs, or outboard effects inputs.

SLS, Red Light, TB, Listen

The first two channels carry the Studio Loud Speaker (SLS) output signals. The external input to the SLS

are available on channels three and four. The Studio Red Light is to be connected to channel 5, taking into consideration that this circuit is not suitable for mains power and should be run at 1 AMP 24 Volts maximum. Connect an External Talkback Switch, if desired, to channel 6. A Listen Mic Input can be connected to channel 7, and PFL Out is available on channel 8.

Headphones

Carries two balanced (channels one through four) and two unbalanced (channels six and seven) stereo headphone outputs. The unbalanced outputs are able to drive up to 10 headphones (without the need for an external headphone amp), the balanced outputs will need to be connected to a headphone amp.

Mix Insert, 2TRK 1,2

Post 2254 balanced insert sends and returns appear on the first four channels of this connector. 2-Track 1, and 2-Track 2 inputs appear on channels five through eight.

Mix Out, 2254

There are two separate mix outputs on the *Series 75*, Modern and Retro. See Modern Output Stage and Retro Output Stage for details. Modern Mix Outputs appear on channels one and two. Retro Mix Outputs appear on channels three and four.

Connect these to available interface inputs or a patch bay as your Stereo Mix Outs. The balanced external inputs to the 2254 Compressors appear on channels five through eight.

Group Outputs/Ins Send

If Group Outputs (balanced) are desired, these should be connected to available DAW inputs. These outputs can also act as Group Insert Sends, in which case connect these to male XLR connectors or a patch bay.

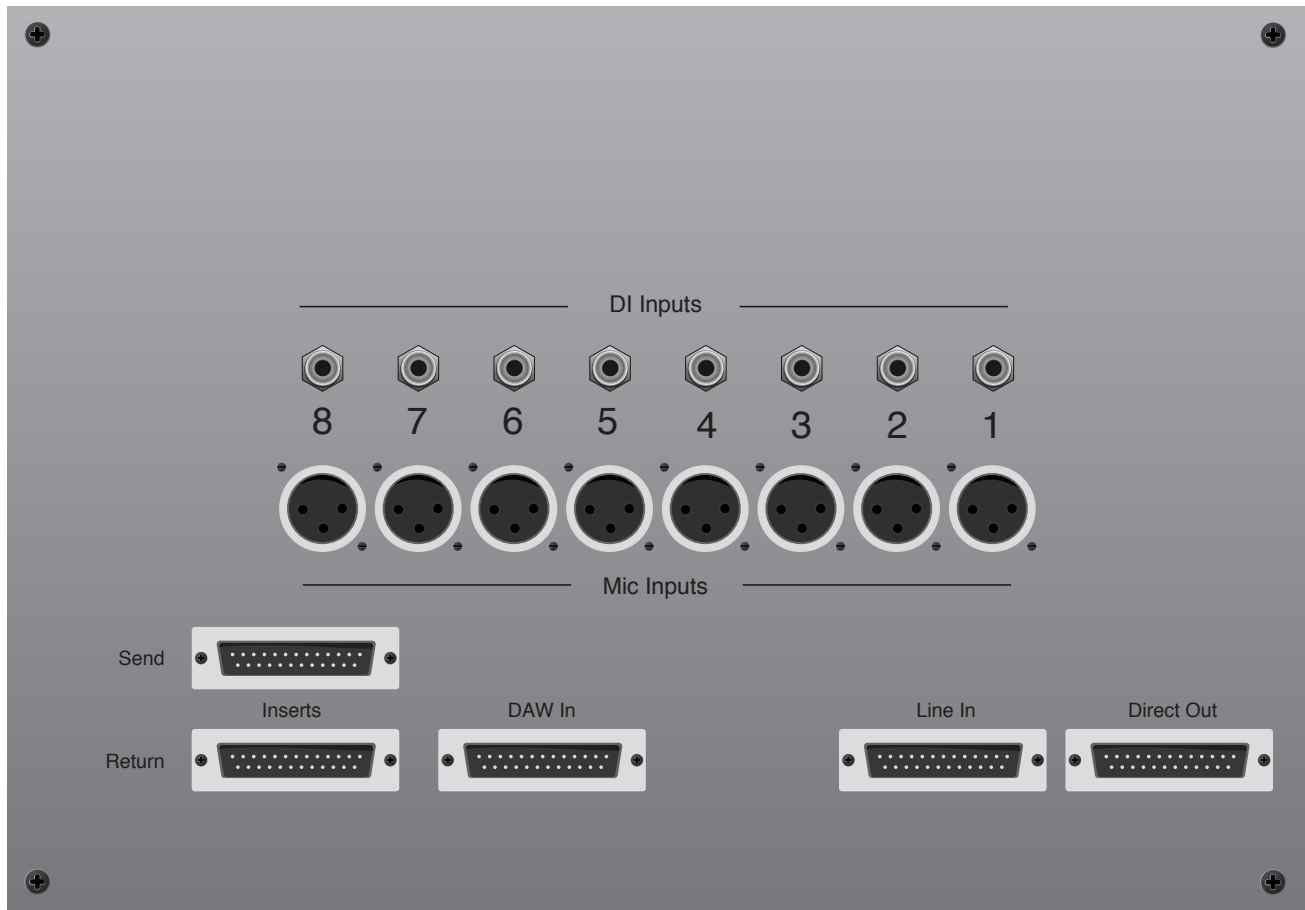
Stem Out

The Stem Outputs carry the eight Group signals post-fader. Recommended as inputs to your DAW, and useful for stem mixing - awesome.

DAW/Ins Return

Extra DAW outputs could be connected here to achieve a further eight inputs of monitoring. However, if the **Group Outputs/Ins Send** connector was used as Insert Sends, use these as your Group Insert Returns.

Channel Bin Rear Panel



On the rear panel of each Channel Bin you will find eight balanced **Mic Inputs** (XLR) and eight **DI inputs** (1/4"). **DAW Inputs** and **Line Inputs** are available on DB25 connectors. These feed the input of each 2081 Module. Mic Inputs are supplied Phantom Power on a per-channel basis.

Insert Sends/Insert Returns

These carry the Insert Sends and Returns from the Channel path. Connect to a patch bay, or individual XLR connectors.

DAW In

Connect the outputs of your DAW here. These may feed the Monitor path or the Channel path dependent on the state of the module Input selection.

Line In

Envisioned connection is the output of external devices (such as outboard effects or any other line level devices). These may feed the Monitor path or the Channel path dependent on the state of the module Input selection.

Direct Out

Post-fader output from the Channel path. The Direct Out is always active, connect this to your DAW inputs.

Operation

Powering Up

The Custom Series 75 is powered by an external Power Supply, and utilises Soft Start Technology.

To ensure a safe power up, observe the following procedure.

1. Switch off Mains Power.
2. Double check that the 115/230V Voltage Selector on the rear of the Power Supply is in the correct position in relation to your mains supply.
3. Connect the cable from the rear of the Power Supply to the rear panel of the consoles Master Section. Align one of the two tabs on the outside housing of the power cable, with the Centre Tab indicated on the image below. Slot the power cable into the connector on the rear panel of the Master Section. Screw the outside housing of the power cable into the rear panel connector ensuring that it locks into place.
4. All audio outputs are automatically muted during the consoles power up procedure.
5. Switch the Power Supply on using the two position switch located on the front panel, up is on.

The Green Light on the front of the Power Supply should light. Due to the classic circuitry, the console will take 15 seconds to stabilise during which all meters will light before returning to the default view.

The Power Supply and Soft Start

A large current is needed to power the console. A circuit board containing a microchip (known as the **Soft Start** board) slowly ramps the voltage up to the required amount. This procedure stops the power supply from drawing too much power and tripping the mains circuit. In the event that the console does not power up, the **Green Light** will not indicate on the front of the Power Supply, and instead the **Red Fault Light** will be active.

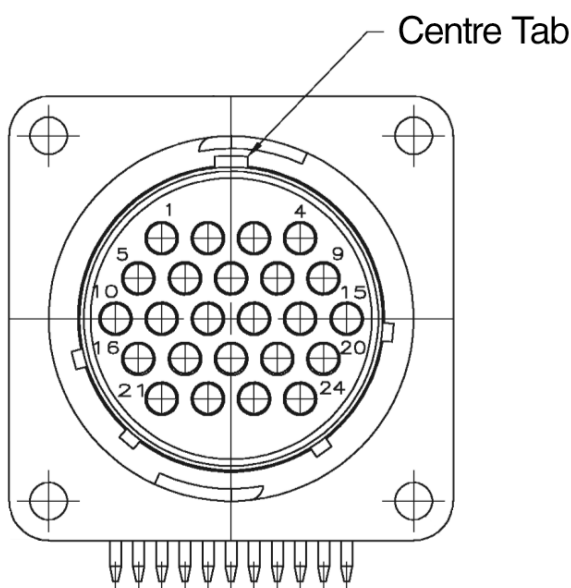
This indicates that one of the following errors has occurred:

- » The 115/230V Voltage Selector, found on the rear of the power supply, may be in the incorrect position.

Or

- » One or both of the two fuses found on the Soft Start circuit board may have blown – power down, remove the lid of the Power Supply, and locate the two fuse holders found adjacent to the 115/230V Voltage Selector (this is rare, generally there will be a reason the fuse has blown – it is highly recommended that the power supply be professionally serviced). Replace with 6 AMP fuses.

If neither of the above solutions fix the problem, have the Power Supply professionally serviced.



The 2081 Module

Each inline 2081 Channel Module has two independent paths, CHANNEL path and MONITOR path. Multiple inputs can be selected for each path. The Channel path is controlled by a fader, and the Monitor path is controlled by a rotary. The Channel path is normally used to process audio to or from your DAW, and the Monitor path is normally used to listen to the return from your DAW or effects processors.

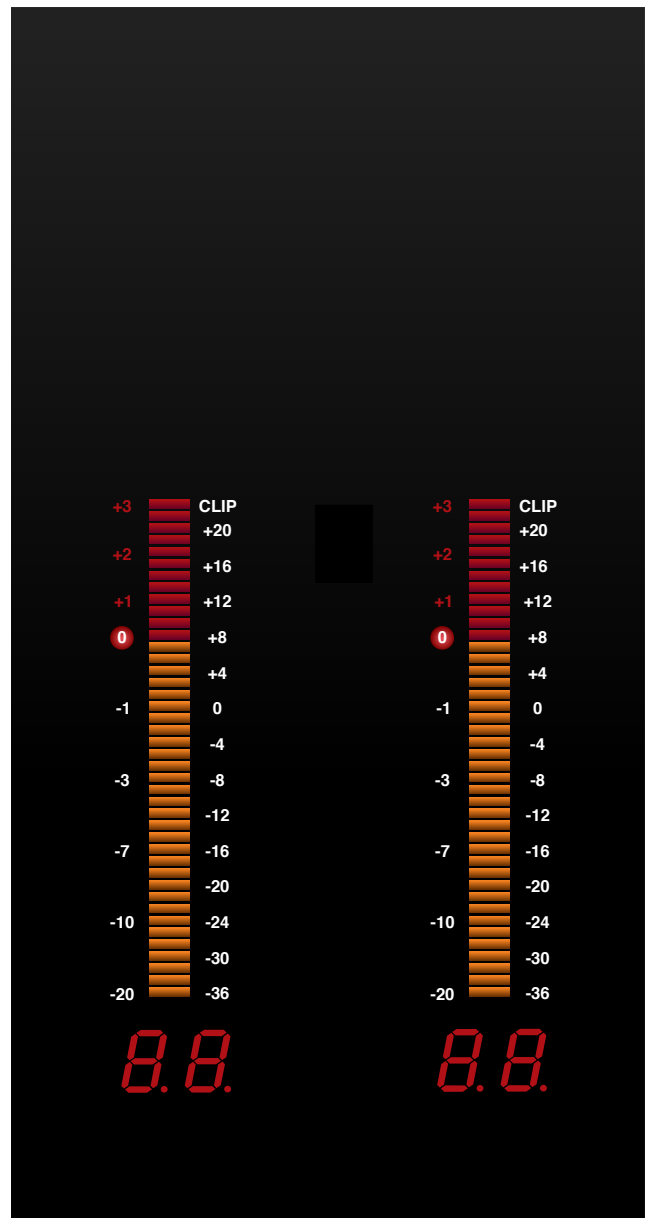
You will notice that the multiple inputs for the Channel path can be cycled through at the top of the module using INPUT, when no LEDs are active, the input is set to Line. The Channel path output fader is at the bottom of the module. The controls for the Monitor path can also be found at the bottom of the module, just above the Channel Path Fader.

Two stereo and three mono Auxiliary Sends can be sourced from the Channel or Monitor path (pre or post fader) by depressing the level control.

The EQ found on the 2081 Channel Module offers the classic sonic flavour of the 1073, with the functionality of a 1081. The output amp is based on the BA283, single ended, class A circuitry with a gapped core transformer, as used in the 1073 and 2254 Compressor. The recreation of the circuitry sees the same sonic qualities as the original, heralded as eminently 'musical', whilst a far cleaner and quieter signal through the redesign of the BA338 amplifying stage has been achieved.

Signals on the Channel path can be routed to multiple destinations by focusing the Channel in the Assign Section using the Channel Select button. Destinations include the Retro Output Stage, Modern Output Stage, Main Mix, and Groups.

The following looks at the individual controls of the 2081 Channel Module in great detail. Descriptions of the console's signal flow can be found in the Signal Flow section, and diagrams can be found in the Block Diagrams section.



Meterbridge

At the top of each module, there is a **Bargraph Meter**. The bargraph meters can display any of the available inputs for the module of which there are four, Mic/Line/DI/DAW (see Channel Meters section for details).

In PPM mode, the top 4 LEDs are brighter to indicate proximity to clipping. In VU mode, the top 8 LEDs are brighter.

The **Channel Number** is indicated by an LED display directly below the bargraph meters. These will light once the console has been powered up.

Labels on the left side of the bargraph indicate +4dBu readings, and the right, -10dBV.

Input Module



The Input Module hosts the Channel Input Selector, Gain and Trim, Phase, 48V, and High Pass Filter. All buttons are recallable using the consoles scenes.

The Input Selector cycles through the four available Channel path inputs. Mic, DI and DAW are indicated by LEDs, when no LEDs are active the Channel input is Line. Once the desired input has been selected, Phantom Power (48V), Gain and Trim controls will adjust the input signal level. The 12 position gain switch (0dB → 60dB) will allow an approximate gain value to be reached. The trim control will adjust the input signal more precisely (-10dB → +10dB).

If required, the Phase control will invert the incoming signal.

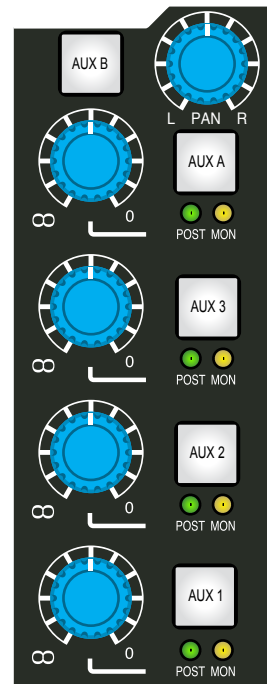
The High Pass Filter with frequency selection allows low frequencies to be rolled off using the continuously variable control between 25Hz and 300Hz (18dB/octave).

The HPF Frequency Selector has dual functionality. When depressed the module will go into Fader Swap mode.

Fader Swap will swap the Channel Path Fader with the Monitor Path Rotary. For example, when CH IN is selected in the Console Modes section, the Channel Path Fader would control signals to tape, and the Monitor Path Rotary would control Monitor Mix levels. Note that Fader Swap can also be activated on a selected Channel in the Assign Section, or globally activated across all Channels in the Console Modes section.

Below the Channel Meter are the Channel Path Destination LEDs. These display the destination to which the Channel path output has been routed. Groups 1 - 8 or Main Mix (Direct Outputs are always active). This is just an indication for convenience (see the Assign Section for how to route a Channel to a group). The Fader Swap LED indicates if Fader Swap is active on the Channel.

Auxiliaries



Each module contains two stereo (A & B) and three mono (Aux 1, Aux 2, Aux 3) **Auxiliary Sends**. The order in which Auxiliaries 1 to 3 are accessed is bottom to top respectively. A & B are situated above the three mono sends. All features other than the level controls in the Auxiliary Section are recallable.

Auxiliary 1, 2 and 3 have individual level controls.

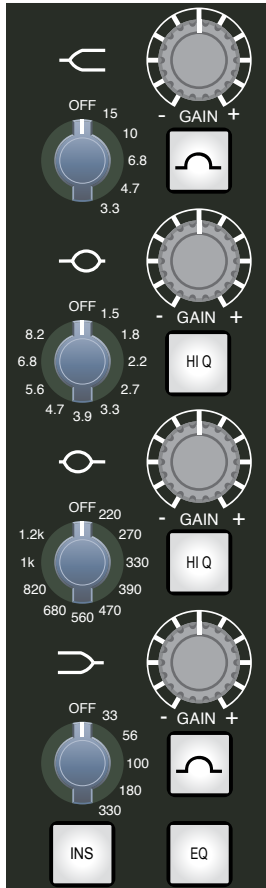
Auxiliary A and **Auxiliary B** are stereo sends that share a level control. All Auxiliary's default position is pre-fader on the Channel path. When the level controls are depressed, they cycle through the conventional positions in the following order - Channel Pre, Channel Post,

Monitor Pre, Monitor Post.

If desired, Send A and B can be engaged simultaneously. If both sends are active (i.e. for two stereo cue sends), the shared level control will increase/decrease the overall level and the pan will balance the level across the active sends.

Two available stereo cue sends allow the flexibility of Aux A being active on one module, whilst Aux B is active on another.

2081 EQ



Based on the acclaimed 1973 - 1081 EQ. In a recording or mixdown environment the 2081 Channel Module's EQ, blurs the line between circuitry and musicality. In comparison to the original, tweaking the circuitry that controls drive ability and stability versus temperature has resulted in reduced distortion and approximately 9dB more dynamic range. If you are familiar with the original, you will experience far cleaner and quieter output, with that same eminent 'musical' quality.

All buttons are recallable.

Until **EQ** is selected, the circuitry is hard bypassed, i.e., the input is connected directly to the output. Further, each band is hard bypassed until a frequency is selected. This is a new feature not present in the original 1081, resulting in less noise on a signal running through just one or two bands

as opposed to four.

The **2081 EQ** is a four band semi-parametric EQ. Bell curve and Hi Q controls, adjacent to the Frequency Selectors, switch between a narrow/wide Q on the high and low mids, or a narrow Q/shelving EQ on the high and low frequencies.

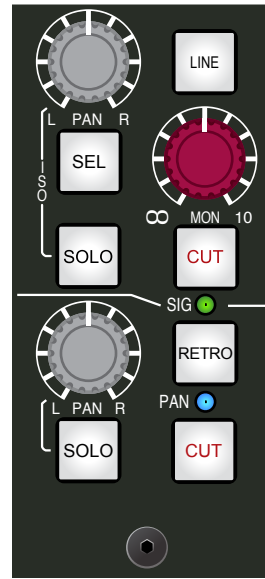
The **Frequency Selector** controls are stepped and select which frequencies will be boost/cut by the continuously variable gain controls. When set to the 12 o'clock position the Frequency Selector is off and the band is in hard bypass.

EQ Ranges:

- » HF - 3.3Khz - 15Khz
- » HM - 1.5Khz - 8.2Khz
- » LM - 220Hz - 1.2Khz
- » LF - 33Hz - 330Hz

The **INS** and **EQ** controls at the bottom of the 2081 EQ, engage the insert and EQ respectively. The insert point defaults post-EQ, pre-fader. If desired, this can be moved pre-EQ by a jumper on the Channel circuit board (for details see Modifications).

Monitor path, Channel Output & Retro



The Monitor path section features a rotary trim control and two selectable inputs, DAW and Line. Line, Retro, Cut, Solo and Solo Isolate are recallable.

The default input for the Monitor path is DAW when CH INPUT is selected, and LINE when MON INPUT is selected in the Console Modes section. Selecting LINE will toggle between these two inputs. DAW is the envisioned return from your chosen multi-track. Line may be a return from external equipment such as effects units. The Signal LED will indicate when the Monitor path is receiving signal.

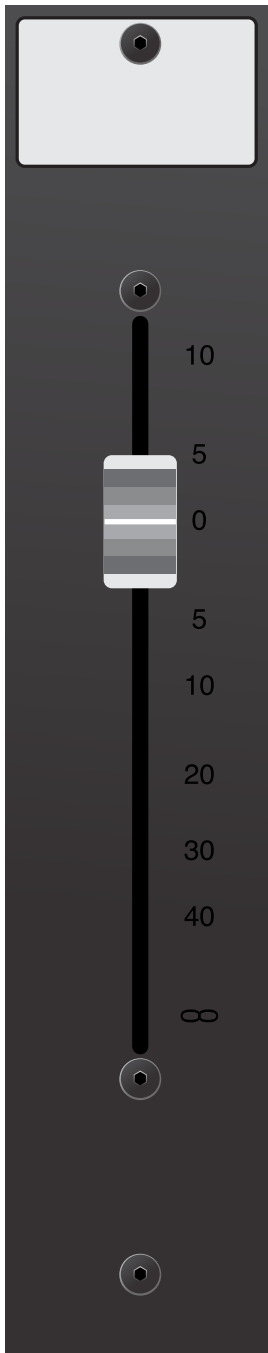
The Pan control in the Monitor path section is dual function and will Solo Isolate when depressed.

Channel Select (SEL) will Focus the Channel in the Assign Section of the console. From here, the Channel can be routed to the Main Mix or Groups 1 through 8.

The Channel path Pan, Solo (see Solo Modes) and Cut can be accessed directly below the Monitor path section. By default, the Pan knob is inactive. Channel Panning can be activated globally in the Channel Modes section, or individually by selecting the Channel and pressing PAN in the Assign Section. As with the Monitor path, the Pan control in the Channel path has dual functionality and will Solo Isolate when depressed.

The Pan LED indicates if Pan is active on the Channel. Note that panning will only be effective if the Channel is routed to the Main Mix or multiple Groups.

Retro routes the Channel path to the Retro Output Stage, if inactive the Channel path feeds the Modern Output Stage.



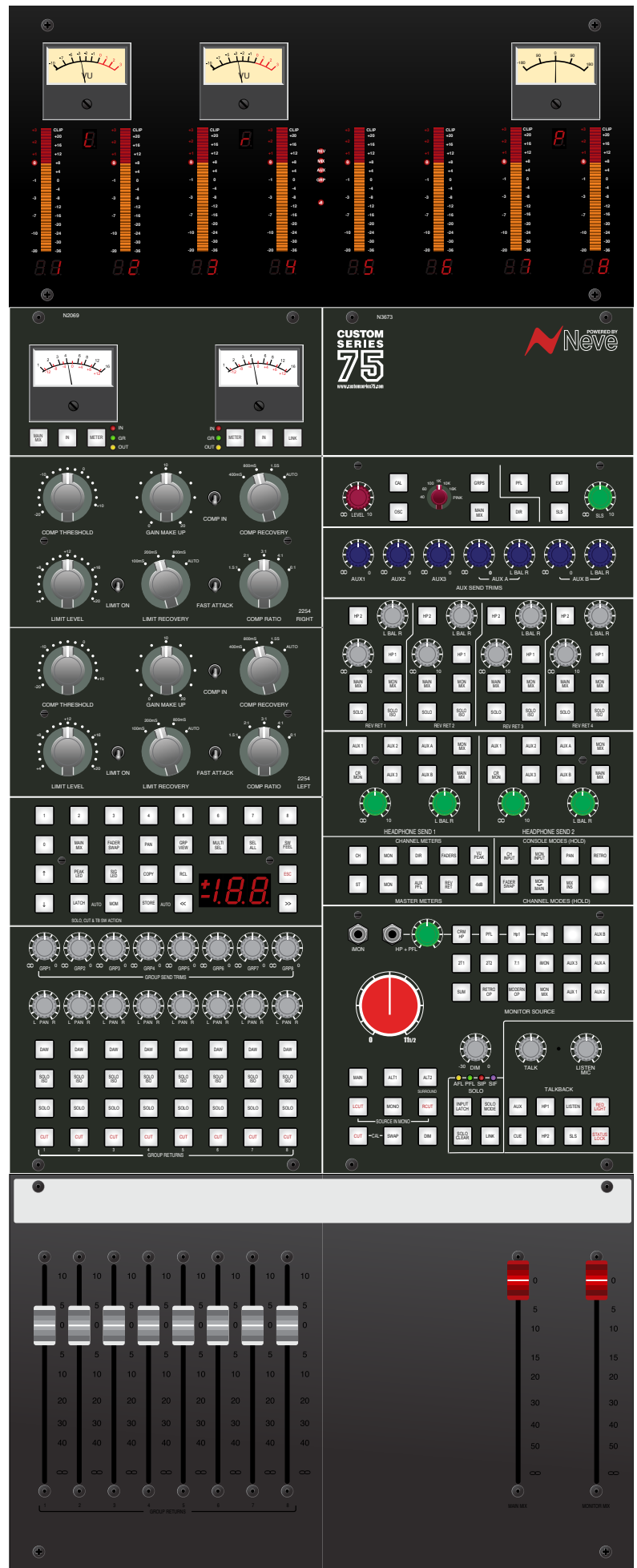
Channel Path Fader

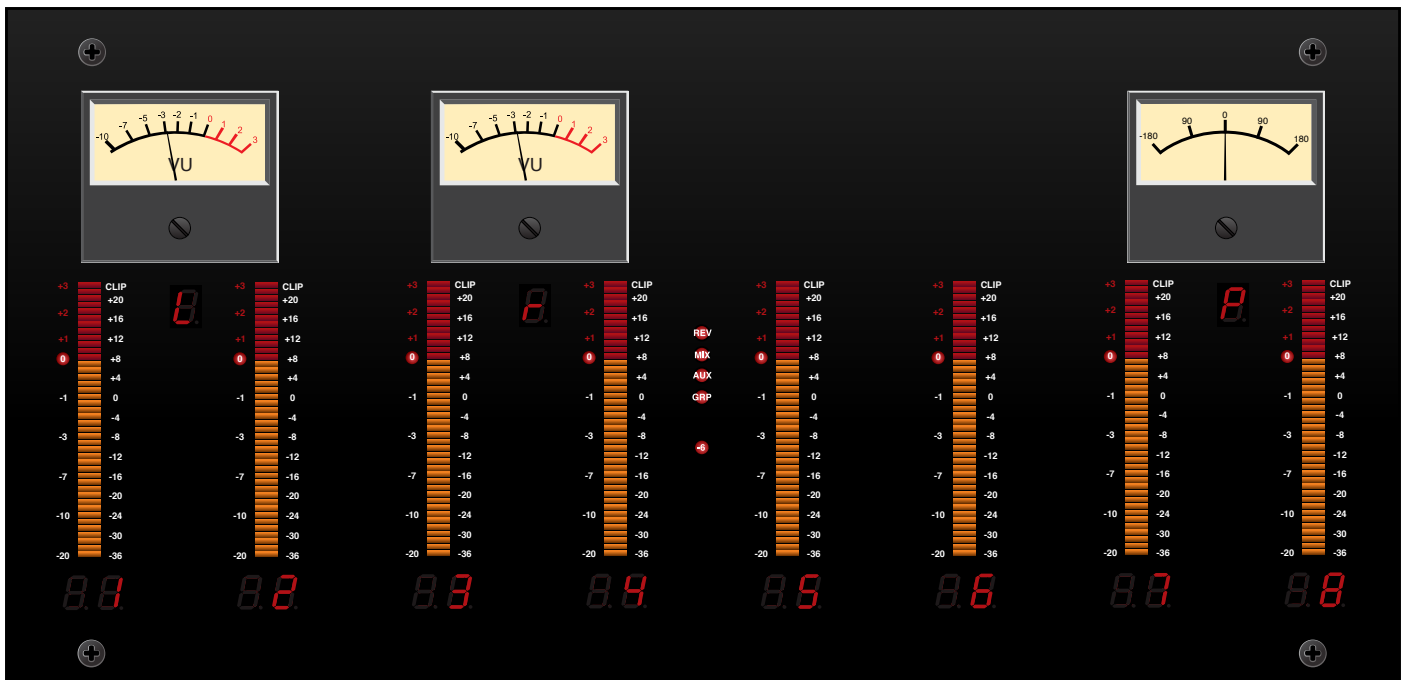
The Channel Path Fader feeds the **Direct Out**. The Destination LEDs situated at the top of each Module (below the Channel Path Meters) will indicate whether the Channel Path Output is also routed to one or more of the eight **Groups**, or the **Stereo Bus** (via the Retro or Modern bus) - see the Assign Section for routing details.

Master Section

The Master section of the *Custom Series 75* is host to two linkable (and externally patchable) mono 2254 compressors, the 2081 Channel Module routing options, eight Groups, comprehensive monitoring, Listen Back and Talkback controls, Headphone Sends, and an analog Oscillator. There are also eight multiple function bargraphs, two VU meters, a Phase Meter and four Stereo Returns.

The Assign Section and Console Modes allow you to quickly and easily shift between record, mixdown and overdub environments. The eight recallable Scenes will instantly return you to last weeks session.





Metering

The *Series 75* Master Section features a comprehensive meterbridge. Eight 42 segment **Bargraph Meters** allow for seamless VU or PPM metering of the Main Mix, Monitor Mix, Auxiliaries, Groups, or Reverb Returns. When in PPM Mode, the top four segments of each bargraph meter will light brighter to indicate the proximity to clipping. In VU Mode, the top eight segments will light brighter.

The **Phase Meter** is tapped into the physical left and right outputs of the console. The two **VU meters** display the level of the Main Mix Bus.

The signals that are currently being metered are indicated by one of the five **LEDs** situated in the centre of the bargraphs. The desired metering mode can be selected in the Master Meter Controls section. Further, two seven segment LEDs directly below each bargraph indicate which signal each is metering.

The following is an explanation of the possible scenarios.

REV - Bargraphs are displaying the four stereo Reverb Returns - 1L, 1r, 2L, 2r, 3L, 3r, 4L, 4r

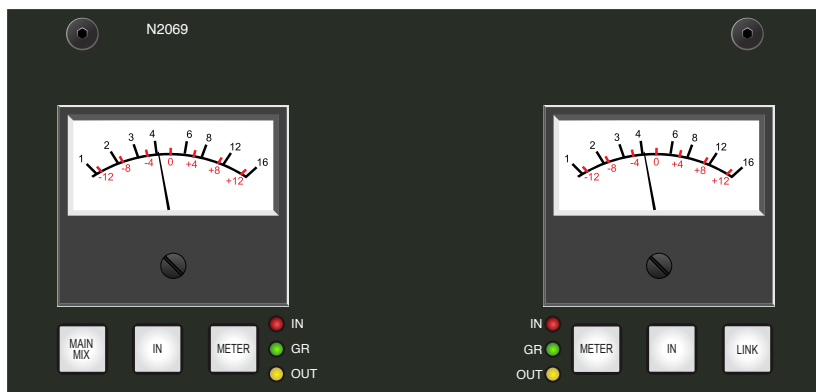
MIX - Bargraphs are displaying Main Mix Outputs, Monitor Mix Outputs, Control Room Outputs and AFL Outputs - L, r, .L, .r, CL, Cr, AL, Ar

AUX - Bargraphs are displaying the Auxiliary Sends and the PFL Solo Bus level - A1, A2, A3, AL, Ar, bL, br, PF

GRP - Bargraphs are displaying the Group levels (pre-fader) - 1, 2, 3, 4, 5, 6, 7, 8

-6 - When in VU Mode, the bargraph meters will drop by 6dB. The inherent nature of non-dynamic instruments may cause the meters to be constantly displaying

maximum level. A -6dB meter reduction function has been added to maintain the use of the bargraph meters in this situation. Please note that this does not pad the outputs.



2254 Compressor

The two on-board 2254 mono compressors are based on the classic 2254 series originally released in 1969. This particular model was re-released in 2009. A powerful compressor/limiter, all soft functions can be stored and are recallable using the *Series 75* Scenes.

Both 2254's are available externally on the rear panel of the Master Section, or can be linked and applied to the Main Mix.

2254 Compressor Meters

MIX - Will apply the 2254 Compressors to the Main Mix Outputs, pre-fader and before the insert points. The 2254 Compressors are also available on the rear panel of

the Master Section. When the Mix button is inactive, the 2254 will process the **external inputs**.

IN - Lights yellow when selected. Sends the signal through the units circuitry, even if the unit does not have the Limit or Compress functions selected. If unlit, the unit is hard bypassed, i.e., the input is connected directly to the output.

METER - Cycles through the Meter display options. Meters can be set to display either the Input signal (**IN** LED will be active), Output signal (**OUT** LED will be active), or the amount of Gain Reduction applied to the signal by the Compressor and Limiter in total (**GR** LED will be active).

ST LINK - Lights yellow when selected. Press this button when you wish to link both 2254 units together. This will process the left and right side of the Main Mix, or an external signal which has been patched into the rear panel of the Master Section.

2254 Controls

COMP IN - Switches the Compressor in (up) and out (down) of the circuit.

COMP THRESHOLD - Can be varied in 2dB steps from -20dBu to +10dBu, thus a wide variety of effects can be achieved. Low Ratios operated with a low Threshold will preserve the dynamic range and also achieve a high signal to noise ratio. A high Ratio with a high Threshold will behave as a partial limiter.

GAIN MAKEUP - Provides up to 20dB of additional gain in 2dB steps.

COMP RECOVERY - Sets the response time the compressor takes to return to 0dB gain reduction.

Three presets are provided: **100 ms**, **200 ms**, **800 ms**, plus an **AUTO** setting.

In the **AUTO** position, both the Attack and Recovery times are composite and self-adjusting. Speeds are rapid for isolated peaks, while remaining slow for persistently high levels, so the impression of a normal dynamic range is preserved as the program rides on a slowly moving 'gain platform'.

COMP RATIO - Controls the ratio of gain reduction to input signal level.

Five preset ratios are provided: **1.5:1**, **2:1**, **3:1**, **4:1** and **6:1**.

The control characteristic is shaped such



that the onset of compression is smooth and progressive, the true ratio being reached within the first 5 to 10dB above the Threshold.

Limiter

Limit On - Switches the Limiter in (up) and out (down) of the circuit.

Limiter Level - Sets the threshold of the Limiter. May be set in steps of 1dB increments from +4dBu to +20dBu.

Limit Recovery - There are three preset **Limit Recovery** times (100ms, 200ms & 800ms), plus an automatic setting (AUTO). In the AUTO position, both the Attack and Recovery times are composite and self-adjusting. Speeds are rapid for isolated peaks, while remaining slow for persistently high levels, so the impression of a normal dynamic range is preserved as the program rides on a slowly moving 'gain platform'.

Fast Attack - Switches the attack time from 100 μ s (up) to 5 ms (down). A slower Attack Time will avoid unpleasant effects when processing signals of a percussive nature (such as solo piano). In this way, a narrow dynamic range may be achieved by feeding high levels into the 2254 and choosing a low limit level.

Assign Section



The Assign Section of the *Series 75* allows selected Channels to be routed to multiple destinations, Scenes to be stored and recalled, and Custom User Features to be set up.

Multi-Select mode will allow multiple Channels to be manipulated at once.

Channel Routing

The Channel path output can be routed to a Group, multiple Groups, or the Main Mix. Note that the Channel Direct Outputs are always active regardless of whether or not the Channel path output has been routed elsewhere.

There are three Channel select options. Ordinarily, when a Channel is selected it is focused in the Assign Section and the previous Channel is deselected.

MULTI-SEL Mode ** [This feature has not yet been implemented - see the About This Manual section for details]. - When MULTI-SEL in the Assign Section is pressed (or two or more Channel Select buttons are held at the same time), multiple Channels can be selected. The LED Display indicates [] while in Multi-Select Mode, and the **ESC** key exits Multi-Select Mode.

SEL ALL ** [This feature has not yet been implemented - see the About This Manual section for details] - Also causes the Assign Section to enter Multi-Select Mode, and selects all Channels.

Any selected Channel(s) can be routed to one or more Groups by pressing and holding any one of the **Group Buttons 1 - 8**. This sums the selected Channel output(s) onto the selected Group Mix Bus, and outputs the resulting signal to the Group Outputs and the Stem Outputs post-fader.

GRP VIEW - This displays which Channels are assigned to which Group. Select the GRP VIEW button (latches) and hold the Group button that corresponds to the Group you would like to view. The Channel Select buttons that are lit indicate that those Channels are routed to that Group. Select the GRP VIEW button again, or ESC to exit Group View mode.

Channel Functions

Once a Channel has been Focused in the Assign Section using the Channel Select button, or multiple Channels have been Focused using Multi-Select mode:

MAIN MIX - Routes the selected Channel(s) to the Retro and Modern Mix Outputs via the Main Mix Fader.

FDR SWAP - Swaps the Monitor Path Rotary with the Channel Path Fader, ie, the Monitor Path Rotary now controls the Channel path output, and the Channel Path Fader now controls the Monitor path output. Note: All other controls remain unchanged.

PAN - Activates the Pan control on the Channel. This is indicated by a blue LED to the right of the Channel Pan control. If a Channel is routed to multiple Groups, panning will occur across odd and even Groups.

Scenes **

[This feature has not yet been implemented - see the About This Manual section for details].

All recallable buttons on the console can be stored and instantly recalled later. These stored settings are called **Scenes**. A total of eight Scenes can be stored using buttons **1 - 8**.

Scene 0 cannot be stored over, and when recalled, returns all recallable buttons to their neutral state based on the state of the CH INPUT/MON INPUT buttons.

To Store a Scene:

1. Select **STORE**.
2. The eight Scene/Group Buttons will flash and the LED display will show 'ST'.
3. Select one of the eight flashing Scene/Group Buttons.
4. Select **STORE** again to confirm.

To Recall a Scene:

1. Select **RECALL**.
2. The eight Scene/Group Buttons, and Scene 0, will flash. The LED display will show 'rc'.
3. Select the Scene/Group Button under which a previous Scene has been stored.
4. Select **RECALL** again to confirm.

BEWARE! This will reset the current console settings, losing the current sounds forever...

To Copy a Scene:

Settings that have been saved under a Scene can easily be copied to another Scene.

1. Select **COPY**.
2. The eight Scene/Group Buttons, and Scene 0, will flash. The LED display will show 'cP'.
3. Select the Scene/Group Button under which the previously saved Scene is stored.
4. Select **COPY** again.
5. The eight Scene/Group Buttons will flash again.
6. Select the Scene/Group Button under which

you wish to copy the selected Scene to.

7. Select **STORE** to confirm.

Custom User Features

The following features are aimed at integrating the user's personal workflow with the *Series 75* console.

All user features are recallable using the console's Scenes.

↑ & ↓ - Used in conjunction with **PEAK LED** and **SIG LED** to calibrate the level at which the Peak LED and Signal LED on the 2081 Channel Module will indicate. Hold PEAK LED or SIG LED and calibrate using ↑ & ↓. The Dim Level in the Control Room section can also be used to perform this function.

When calibrating, the level will be displayed on a scale of 0 - 100 on the Assign Section 7 segment LED Display. The Peak LED can be calibrated within +6VU to +18VU (corresponds to +10dBu to +24dBu) and the Signal LED can be calibrated between -20VU and -10VU (corresponds to -24dBu to -14dBu).

SW ACTION - There are three states under which the Talkback, Cut and Solo buttons can operate. This is known as the Switch Action. The three states are:

- » **LATCH** - Solos, Cuts and the Talkback button remain active when selected.
- » **MOM** - Solos, Cuts and the Talkback button are active only when depressed. Momentarily active.
- » **AUTO** - Solos, Cuts and the Talkback button latch when depressed for under one second. When held for over one second they have a momentary response.

Note: If the Switch Action is changed whilst one of the buttons are active, ie Solo, the console remains in the current Switch Action until the next button is selected, or the previous is selected again.

SW FEEL - Switch Feel™ is another function unique to the *Series 75*. Older consoles used switches that performed their action when the button was released. The Cuts and Solos on modern consoles and DAWs instantly perform their task when the user depresses the button, not upon release. Depending on your personal preference, SW FEEL will switch the console's Solos, Cuts and the Talkback button between these two modes. A simple, but powerful feature aiming to integrate the users individual workflow into the console.

LED Display ** [This feature has not yet been implemented - see the About This Manual section for details] - Ordinarily, the LED Display in the Assign Section displays the Channel currently in focus. It is also, however, momentary for many of the console's other

features. The following lists the possible displays:

- » Output volume in dB when the Control Room Volume is altered.
- » Threshold of the Peak LED/Signal LED, using a 0 - 100 scale, when calibrating.
- » Level from -10dB to +10dB when calibrating the Main Spk, ALT1 and ALT2 outputs.
- » **[]** when in Multi-Select Mode.
- » **ST** whilst storing a Scene.
- » **rc** whilst recalling a Scene.
- » **cP** whilst copying a Scene.
- » **Gr** whilst in Group View mode.

will now adjust the output level, and the Main Output VUs in the Master Section Meterbridge will meter 0dB, displaying the trim screw changes. Select CAL again to exit calibration mode.

SLS

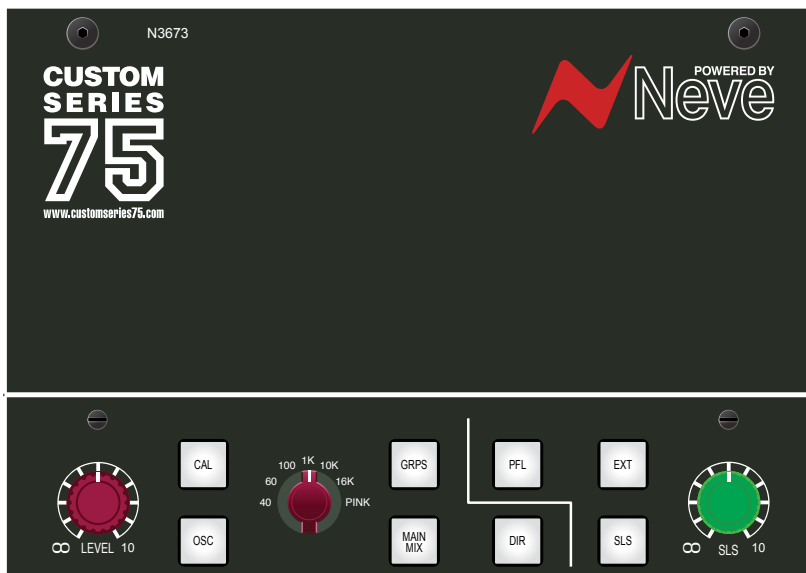
The Studio Loudspeaker (SLS) is an additional speaker output designed for foldback or playback in the live room. The **LEVEL** control operates between -20dBu and +10dBu.

CR SEL - Routes the currently selected Control Room Source to the SLS output.

EXT - Feeds the External SLS Input (available on the rear panel of the Master Section) to the SLS output via the level control.

PFL - Routes the PFL Solo Bus to the SLS output.

Note: Talkback can also be sent to the SLS outputs by selecting **SLS** in the Talkback section.



Oscillator & SLS

Oscillator

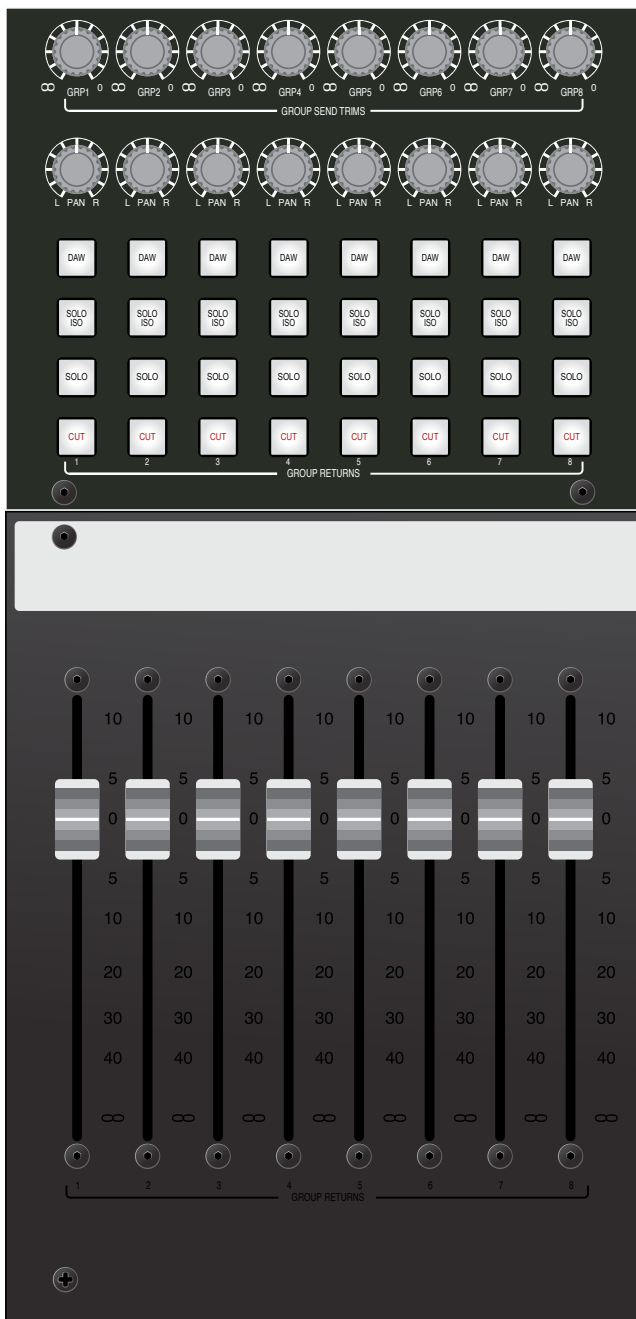
OSC - Activates the Oscillator, which in conjunction with the seven position switch can output 40hz, 60hz, 100hz, 1Khz, 10Khz, 16Khz or pink noise.

GRPS - Routes the Oscillator to the Group Outputs.

MIX - Routes the Oscillator to the Main Mix Outs.

DIR - Routes the Oscillator to the Channel Direct Outputs.

The **Level** control operates between -20dBu and +10dBu. To more finely calibrate the Oscillator output level, select **CAL**. The trim screw adjacent to the level control



Group Send/Returns

There are eight mono Group Sends and Returns on the *Series 75 Console*. All buttons are recallable.

The eight Groups have each been built as a hybrid Retro/Modern assembly. A Retro Output Stage appears before the DAW/Insert Return, after which the circuitry is transformerless.

Each Group can take its input from two places.

- » Individual Channels, which can be routed using the Assign Section (Retro).
- » Or your DAW, by selecting DAW directly above the fader (Modern).

The DAW button may act as a **Group Insert** enable if you

have connected Group Out/Ins Send and DAW/Ins Return to and from outboard gear or a patch bay.

The output of the eight Groups are available at the Local Mix Bus (which feeds both Retro and Modern Mix Outs), Group Out/Ins Send (pre-fader), and the Stem Outputs (post-fader).

GROUP SEND TRIMS - These attenuate the summed signals routed to the Group, pre-fader. Generally these should be left at 0dB, however can be attenuated to $-\infty$. Practical application may be backing off the level at the Group Out/Ins Send, ie, the input to your outboard gear if using Group Inserts.

PAN - Allows the mono Group signal to be panned across the Retro and Modern Mix Outs.

DAW - Switches the Group input to the DAW/Ins Return signal. Depending on how you have connected the console, this will either:

- » Switch the input of the Group Faders to connected DAW outputs and override any currently assigned Channels to that Group, or
- » Activate the Group Insert Return of which the send is Group Out/Ins Send.

ISO - Solo Isolates the Group, resulting in the Group not being Cut when another Channel or Group is Soloed. This is very useful when routing multiple Channels to a Group, then soloing individual Channels within that Group.

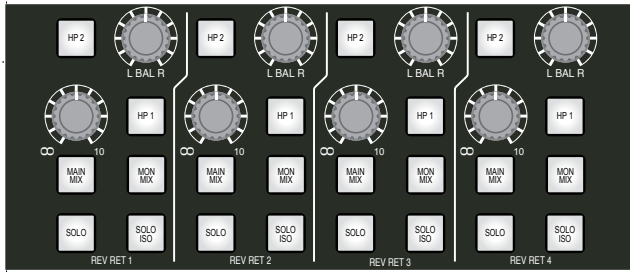
SOLO - Depending on which Solo Mode is selected in the Control Room Section, the Channel output will be:

- » Fed to either the AFL or PFL Solo Bus
- » Soloed while all other Channels are Cut (SIP)
- » Fed to the AFL Bus along with the Main Mix which is padded 10dB (SIF)

CUT - Cuts the Group signal (post Stem Out, pre Local Mix Bus).

- » NOTE: When 7.1 is selected in the Control Room Section, the 7.1 Input feeds the ALT 2 Speaker Outputs (see Connections). When this is active, the Cuts and Solos above the Group Faders will effect the individual ALT2 Speaker Outputs.

Stem Outputs - These post-fader Group Outputs are always active and allow subgroups within the mix to be easily recorded back into the DAW (stems). A Retro Output Stage at the Group Output effect any grouped Channels, hence Channel signals at the Stem Outputs will be sonically coloured.



Reverb Returns

The *Series 75* features four stereo Reverb Returns. Envisioned input is the output of external devices that were fed by the console's Auxiliary Sends. The Reverb Returns can feed Headphone Outputs 1 & 2, the Main Mix, and the Monitor Mix. Multiple destinations can be selected at once.

Solo Isolate - When selected, the Reverb Return will not be cut when a Channel, Group, or another Reverb Return is soloed. Practical application may be monitoring an effect when its dry signal is soloed.

HP1 - Routes the Reverb Return to Headphone Output 1.

HP2 - Routes the Reverb Return to Headphone Output 2.

MAIN MIX - Routes the Reverb Return to the Main Mix Out.

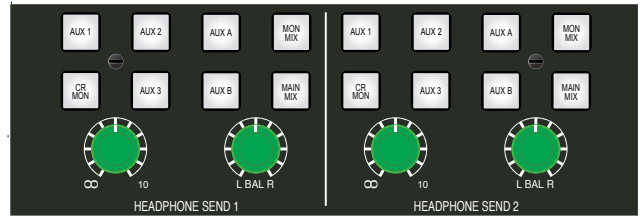
MON MIX - Routes the Reverb Return to the Monitor Mix Out.



Auxiliary Master Section

The Auxiliary Master Section contains the overall attenuation controls for the three mono and two stereo (or a possible seven mono) Auxiliary Sends. Talkback is available on all Auxiliary Sends.

Auxiliary Masters A & B are stereo sends. These pass through a balance control before feeding Headphone Outputs, the Control Room, and/or Auxiliary Outputs on the rear panel of the Master Section. Envisioned as headphone sends during recording, they could be used for other purposes such as stereo effects sends, or 4 mono sends - in which case the pan pot will become a secondary level control. Auxiliary Masters 1, 2 & 3 are mono, and can also feed the above destinations.



Headphone Sends

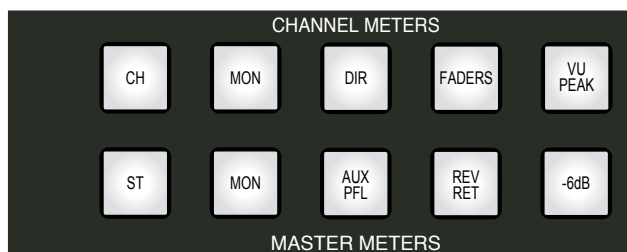
The Headphone Sends section allows any of the Auxiliary Sends to be selected as the source for the headphones. Multiple sources may be selected simultaneously. All buttons are recallable.

Aux 1, 2, 3, A & B - Selects the signal at the respective Auxiliary Master, as the Headphone Output source.

CR Mon - Selects the Control Room as the Headphone Output source.

Main Mix - Selects the Main Mix, post-fader, as the Headphone Output source.

Mon Mix - Selects the Monitor Mix, post-fader, as the Headphone Output source.



Channel Meters/Master Meters

Eight Bargraph Meters are situated above each Channel Bin. Another eight *multi-function* Bargraphs, and the two Main Output VU Meters are situated in the Master Section Meterbridge.

A further eight VU Meters, which meter the Group Outputs, can be located in the Meterbridges adjacent to the Master Section.

The signals that are currently being metered are indicated by one of the five LEDs situated in the centre of the bargraphs. Further, two seven segment LEDs directly below each bargraph indicate which signal each is metering. See the Master Metering and Channel Metering sections for details.

The top row of buttons consist of **Channel Meter** buttons, directly below are the **Master Meter** buttons. These control all Bargraph and VU meters. All buttons are recallable.

Channel Meter Controls

The following metering options effect all Channel Meters.

CH - Meter Channel Path inputs.

MON - Meter Monitor Path outputs.

DIR - Meter Direct Outputs.

If **FADERS** is selected, the Bargraph Meters will display the level of the faders.

VU / PEAK toggles between VU metering or Peak Program Metering. In PPM mode, the top 4 LEDs are brighter to indicate proximity to clipping. In VU mode, the top 8 LEDs are brighter.

Master Meter Controls

The following metering options effect the Master Section Meters.

ST - Meter (in this order) Main Outputs, Monitor Outputs, Control Room Outputs and AFL Outputs. Labeling under

the Meters will read: L, r, .L, .r, CL, Cr, AL, Ar.

GRP - Meter the Group Outputs: 1, 2, 3, 4, 5, 6, 7, 8.

AUX/PFL - Meter the Auxiliary Master levels and the PFL Outputs: A1, A2, A3, AL, Ar, bL, br, PF.

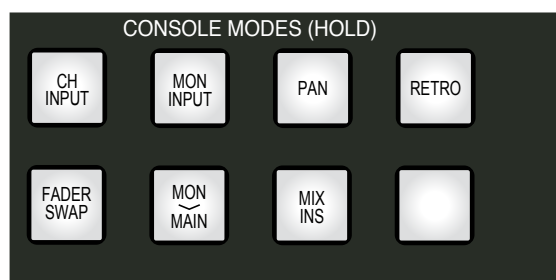
REV RET - Meter the four stereo Reverb Returns: 1L, 1r, 2L, 2r, 3L, 3r, 4L, 4r.

-6 - Attenuates the Bargraph Meters by 6dB when in VU mode. The inherent nature of non-dynamic instruments may cause the Bargraph Meters to constantly display maximum level when in VU mode, rendering the meters unusable. This function will allow you to maintain the use of the VUs in this situation. If meters are in PPM mode when -6 is selected, they will be automatically set to VU.

Note: -6 effects the meters only, it does not pad the outputs.

VU Meters - The two VU Meters in the Master Section Meterbridge display the level at the Retro/Modern Mix Outputs.

Console/Channel Modes



Depending on the application at hand, say for example recording as opposed to mixdown, the **Console Modes** section will change the global state of the console to reflect the most appropriate setup.

The top row consists of **Console Modes** buttons, directly below are the **Channel Modes** buttons.

To prevent the console from being accidentally reset mid-session, the following functions must be held for 1 second.

This section details the two global functions, Channel Input (**CH INPUT**) and Monitor Input (**MON INPUT**).

Each of the above buttons must be held for one second before the function is executed. This is called the **Hold** function and, for reasons about to be revealed, allow you to re-think your decision before committing.

The following operations will effect all modules.

CHAN INPUT - Cycles through the four Channel path

input options (Mic, DI, DAW and Line).

MON INPUT - Switches between the two Monitor path input options (DAW and Line).

Note: Be careful when cycling through Channel Modes. If the console is in Record Mode and the CHAN INPUT button is cycled to select 'DAW' when the DAW is armed, you will lose your client and quite possibly your hearing. Take a moment to think about the result of different Channel and Console Mode combinations.

PAN - Activates the Pan control on all Channels.

RETRO - Routes the Channel path to the Channel **Retro Output Stage** or Channel **Modern Output Stage** before they join either the **Voltage Summing** or **Current Summing** Bus respectively.

Keep in mind that the above functions can also be changed on a per Channel basis in the **Channel/Monitor Modules** section.

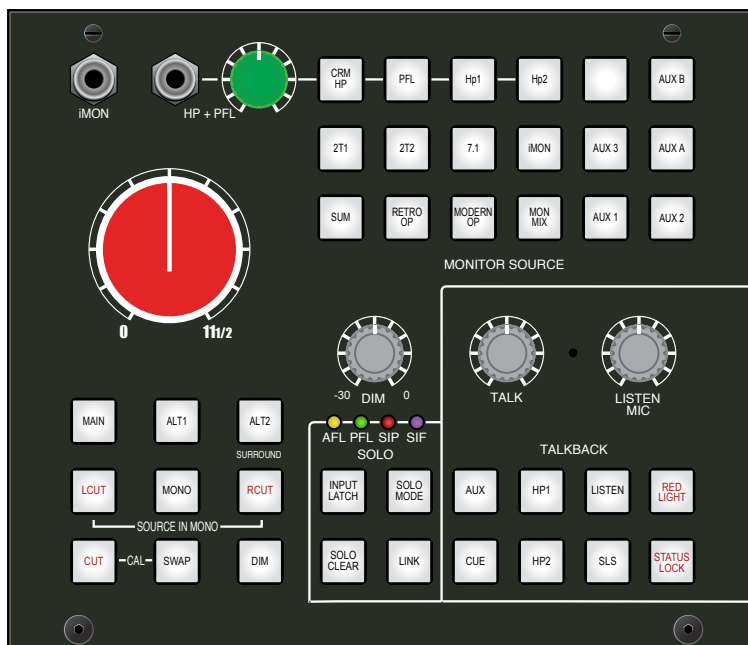
This setup is highly flexible, **with a little thought, almost anything is possible.**

FDR SWAP - Globally swaps the Channel Path Faders with the Monitor Path Rotaries. This may be useful for users who prefer to record with Monitor Path Rotaries controlling the '*to tape*' levels, and faders controlling the '*from tape*' levels.

Note: This function swaps the level controls only. Solos, Cuts, Select, Line and Retro buttons on each module remain unchanged. Also, Fader Swap can be engaged on individual modules by depressing the HPF Selector in the **Input** section of each module.

MON → MAIN - Routes the signal that is present at the Monitor Mix Fader to the Main Mix Outputs, via the Main Mix Fader. This may be useful for bouncing rough mixes whilst recording. It may also be useful when recording a mix back to the DAW - including effects that have been returned to the Monitor path.

MIX INS - Activates the patchable Insert over the Main Mix. Note: The send is always active.



surround sound monitoring. Selecting 7.1 in the Monitor Source section routes the 7.1 Input to the ALT2 Speaker Outputs and changes the Group Cuts and Solos to now affect these outputs. This allows the additional ability to cut or solo individual speakers when monitoring in 7.1 * [This feature has not yet been implemented - see the About This Manual section for details].

LCUT & RCUT - These cut the left and right channels of the currently selected Speaker Outputs. If monitoring surround using ALT2, just the L & R speakers will be cut.

MONO - Feeds a mono sum of the selected Monitor Source to the Speaker Outputs.

Further, if **LCUT** and **MONO** are selected, the right channel of the Monitor Source will be routed to the selected left AND right Speaker Outputs. If **RCUT** and **MONO** are selected, the opposite occurs.

Control Room

The high fidelity Control Room monitoring circuitry allows for sonically transparent monitoring of up to 12 sources. Located in the bottom right hand corner of the Master Section, it hosts the Main Monitor Volume Control, source selection for the Control Room Monitors, global Solo Modes, and Talkback controls.

Other features include a Control Room Headphone Output and an input labeled **iMON** - This is an 1/8" TRS input designed for monitoring of external equipment, such as MP3 players, through the Control Room Speakers.

Control Room Volume and Controls

By far, the most exhaustive amount of effort of all of the *Series 75* features has gone into the design of the Control Room Volume circuitry.

11 1/2 - If it's too loud, you're too old.

Up to three pairs of monitors can be connected to the *Series 75* [see Connections for details].

MAIN - Routes the selected Monitor Source to the Main Spk outputs.

ALT1 - Routes the selected Monitor Source to the Alt Spk 1 outputs.

ALT2 - Routes the selected Monitor Source to the Alt Spk 2 outputs.

NOTE: ALT2 can be used as a third pair of stereo monitors, however also supports eight outputs for 7.1

Further still, if **MONO** and **SWAP** are selected, the left and right channels of the selected Monitor Source are subtracted, and only the difference is heard.

When used in conjunction, LCUT, RCUT and MONO could be useful for calibrating speakers, checking for mono mix compatibility, focusing on signals present only in one channel of the selected Monitor Source, and the list goes on...

CUT - Cuts the selected Speaker Outputs.

SWAP - Reverses the selected L & R Speaker Outputs.

-CAL- * [This feature has not yet been implemented - see the About This Manual section for details] - When both Cut and Swap are held, ALT 1 and ALT 2 enter Calibration Mode. By selecting ALT 1 or ALT 2 and operating the DIM Level, both speaker outputs can be calibrated to match the MAIN Speaker Output. To exit Calibration Mode, select CUT.

DIM - Dims the Speaker Outputs by a level set by the **Dim Control**. The DIM button will be activated automatically when the following buttons in the Talkback section are activated: **AUX**, **CUE**, **HP1** and **HP2**.

Monitor Source

The Monitor Source section of the *Series 75* Control Room panel is a 12 input analogue summing mixer, using high fidelity modern assembly methods for transparency. Up to 12 sources may be selected and monitored at once.

2T1 - Routes 2 Track 1 to the selected Speaker Outputs via the Main Volume control.

2T2 - Routes 2 Track 2 to the selected Speaker Outputs via the Main Volume control.

7.1 - Routes the 7.1 input to the selected Speaker Outputs via the Main Volume control. The ALT2 Speaker Outputs are 7.1 capable.

NOTE: Selecting 7.1 also alters the Group Cuts and Solos, which will now affect the ALT2 Speaker Outputs. This allows the additional ability to cut or solo individual speakers when monitoring in surround sound.

iMON - Routes the iMON input (top left corner of the Control Room section) to the selected Speaker Outputs via the Main Volume control.

SUM - Is a latching function, and allows multiple Monitor Sources to be selected. When SUM is selected again, the Monitor Source will revert to the last selected source.

RETRO OP - Routes the Main Mix (post Master Fader) through the main Retro Mix stage (LO1166) to the Main Output & the Control Room section.

MDRN OP - Routes the Main Mix (post Master Fader) through the main Modern Mix stage (transformerless) to the Main Output & the Control Room section.

MON MIX - Routes the Monitor Mix to the Main Output & the Control Room section.

AUX 1, AUX 2, AUX 3 and **AUX A, AUX B** buttons route the respective send to the selected Speaker Outputs via the Master Aux control and the Main Volume control.

Control Room Headphones

The Control Room Headphone Output (**HP**) is located directly above the Main Volume Control. The level control adjacent to it effects the output level of the headphone and the PFL bus.

CRM HP - Feeds the currently selected Monitor Source to the Control Room Headphones.

HP1 - Routes Headphone Output 1 to the Control Room Headphones.

HP2 - Routes Headphone Output 2 to the Control Room Headphones.

PFL - Feeds the PFL bus to the Control Room Headphones.

Solo

The following buttons effect soloing globally. There are four global Solo Modes available on the *Series 75* console. After-Fader Listen, Pre-Fader Listen, Solo In Place, and Solo In Front. LEDs in the Solo Modes section light to display which of the four modes are active at any one time. All buttons other than Solo Clear are recallable.

INPUT LATCH - Previous Solos stay active when another Solo is selected. This function can also be activated by holding a Solo button whilst selecting the next.

SOLO CLEAR - Clears all active Solos on the console.

SOLO MODE - Cycles through the four Solo Modes. After-Fader Listen (**AFL ***), Pre-Fader Listen (**PFL ***), Solo In Place (**SIP**), and Solo In Front (**SIF ***).

- » **AFL *** [AFL, PFL & SIF have not yet been implemented - see the About This Manual section for details] - A Solo button will send an After Fader Listen signal from the soloed Channel or Monitor path to the AFL bus and on to the Speaker Outputs. The AFL bus is stereo, and soloing is non-destructive (solo does not effect the Channel Direct Output or Main Mix Out signals).
- » **PFL *** [AFL, PFL & SIF have not yet been implemented - see the About This Manual section for details] - A Pre-Fader Listen signal will be sent from the soloed Channel or Monitor path to the PFL bus and on to the Speaker Outputs. The PFL bus is mono, and soloing is non-destructive. The PFL Level Control is directly above the Control Room Volume.
- » **SIP** - A Solo button will simply cut all other signals which have neither their solo isolate mode activated, or been soloed themselves. Soloing is destructive (Channel Direct Outputs and Mix Outputs are Cut).
- » **SIF *** [AFL, PFL & SIF have not yet been implemented - see the About This Manual section for details] - An After Fader Listen signal will be sent from the selected Channel or Monitor path to the AFL bus and on to the Speaker Outputs. The Main Mix is padded 10dB and added to the AFL bus. Soloing is non-destructive.

LINK - Links the Channel path and Monitor path Solos. When selected, soloing any signal (Channel or Monitor Path) will result in all other un-soloed channels being cut. If unselected, Channel path and Monitor path Solos operate independently.

Talkback and Listen Mic

The built-in **TALKBACK** microphone is accessed here. Talkback can be fed to the Auxiliary Sends, Cues, two Headphone Outputs, and Studio Loudspeakers. When Talkback is activated, DIM is automatically engaged.

- » **AUX** - Feeds Talkback to Auxiliary Outputs 1, 2, 3, A and B.
- » **HP1 & HP2** - Feeds Talkback to Headphone Send 1 or 2 via the respective Headphone Send Level.

- » **CUE** - Routes Talkback to both Headphone Sends 1 & 2 via their level controls.
- » **SLS** - Routes Talkback to the Studio Loudspeakers via the SLS Level Control.

The **LISTEN MIC** is an extra input designed for a dedicated studio to control room communication microphone (dynamic only). The rotary control labeled **LISTEN MIC** sets the level of this input. The button labeled **LISTEN**, situated directly below, sends the signal to the Speaker Outputs cutting the currently selected Monitor Source.

STATUS LOCK - Locks out the **CONSOLE MODE** buttons, **CHANNEL MODE** buttons (other than PAN), **OSC to GRPS/MAIN MIX**, and the **SIP SOLO MODE**. This prevents any destructive functions from effecting the Main Mix Output or Channel Direct Outputs.

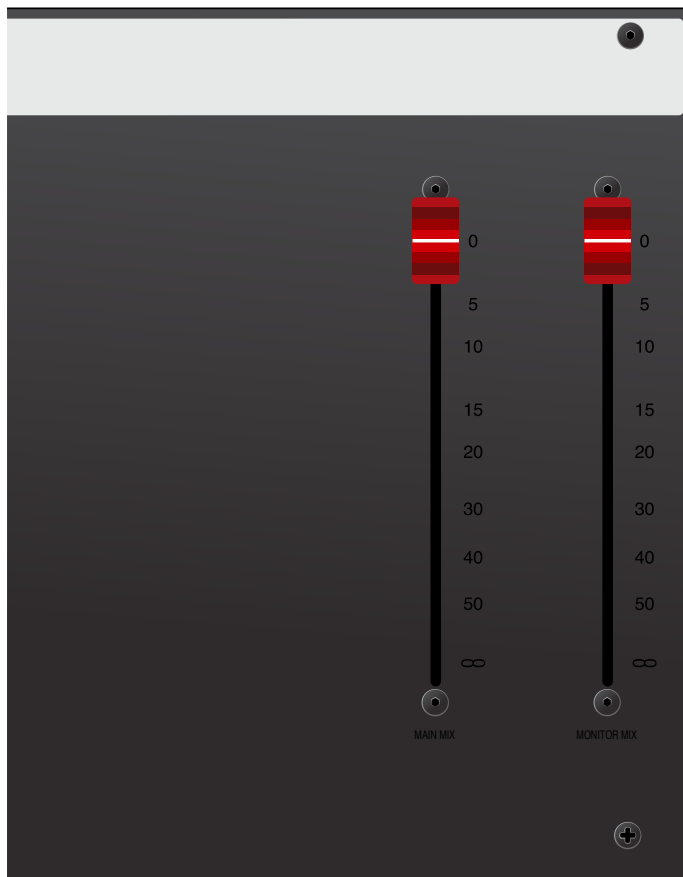
RED LIGHT - Completes the isolated voltage circuit required to activate a red light if connected. Red Light also engages Status Lock to prevent the Main Mix Output or Channel Direct Outputs from being effected.

Compressors lie pre-fader, and an Insert point lies pre-fader, post-compressor.

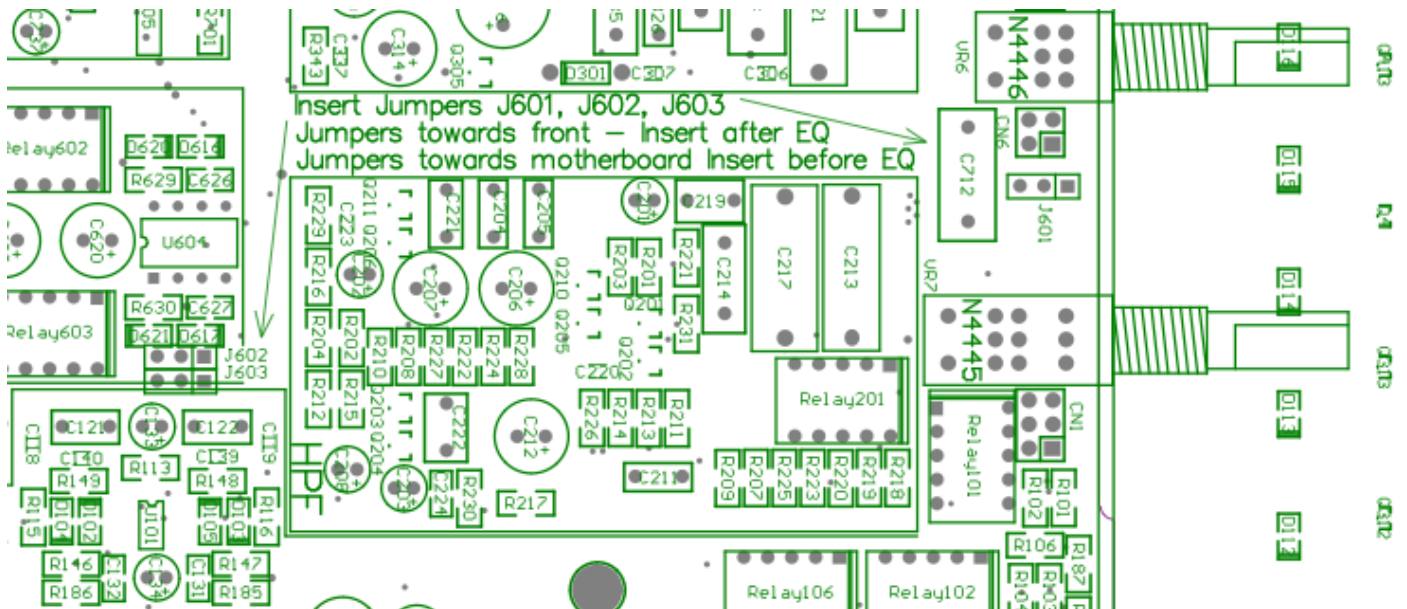
The stereo **MONITOR MIX Fader** is fed by the Monitor paths, and controls the level feeding the (Modern) Monitor Mix Outputs. When **MON → MAIN** is selected in the Console Modes section, the output of the Monitor Mix Fader joins the signal on the Main Mix Fader, and on to the Retro and Modern Mix Outputs.

Faders

The stereo **MAIN MIX Fader** is fed by the Channel paths, and controls the level feeding the two stereo Mix Outs via their respective Retro and Modern Output Stages.



The two linkable and externally patchable mono 2254



Modifications

There are two modifications that, depending on your workflow, you may like to make.

Insert Points on each 2081 Module default post-EQ. A quick jumper change on the Channel PCB will move it pre-EQ.

Additional Modules can be purchased and installed if there is still room in your console chassis.

Before completing either of the following modifications make sure the power supply and interfaces are switched off, and have been off for at least 1 minute.

Modification 1 - Insert Point Post/Pre EQ

1. Double check the power supply is off.
2. Remove the hex screws situated at the top and bottom of the 2081 Module.
3. The Modules are attached to the Channel Bin Motherboard beneath them, firmly grip the Aux A/B Pan Control and the Monitor Path Pan Control. Carefully remove the Module from the Channel Bin.
4. Find the area on the Module PCB that is indicated in the image below.
5. Three jumpers indicated J601, J602 and J603 need to be moved.
6. If all three jumpers are placed on the two pins closest to the front panel of the Module, the Insert will fall post-EQ.

7. If all three jumpers are placed on the two pins closest to the Channel Bin Motherboard, the Insert will fall pre-EQ.
8. Once the changes have been made, replace the Module carefully and firmly back into the Channel Bin Motherboard.
9. Replace both hex screws before powering up.

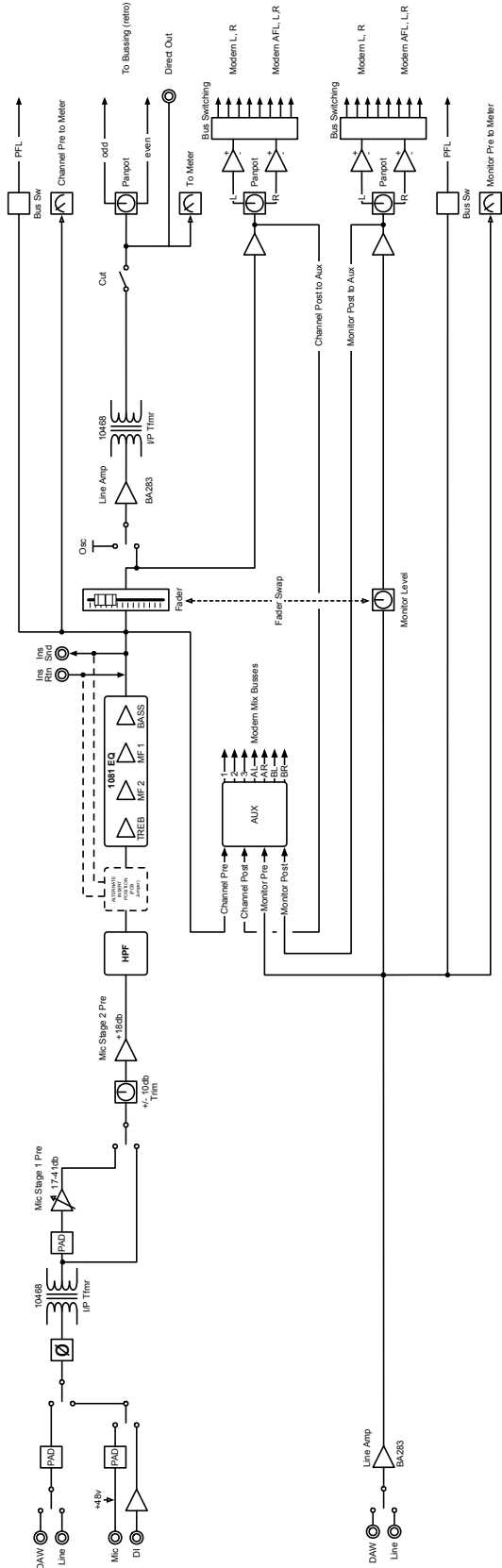
Modification 2 - Installing Additional Modules

1. Double check the power supply is off.
2. Remove the hex screws situated at the top and bottom of the blank Channel Bin panels.
3. Remove the panels.
4. Place the Module(s) carefully and firmly into the Channel Bin Motherboard. This should provide a satisfying click...
5. Fit both hex screws before powering up.
6. Make sure the correct size blank panels have been ordered and are refitted to protect the console from dust etc.
7. On power up, the console will recognise the additional modules and update the SMD chip to the current motherboard version if necessary.

Block Diagrams

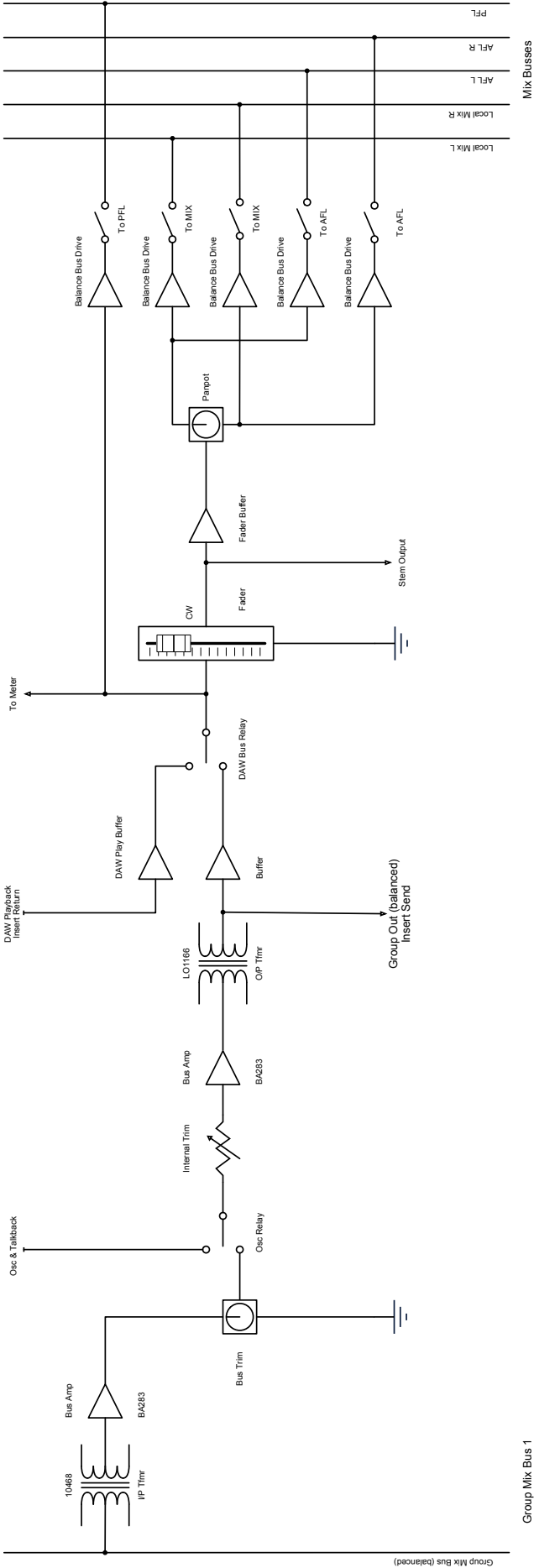
Channel & Input Block Diagram

Title: 2081 Module Block Diagrams		
Size: A3	Number: 1x2081	Revision: A
File:		



Group Amps

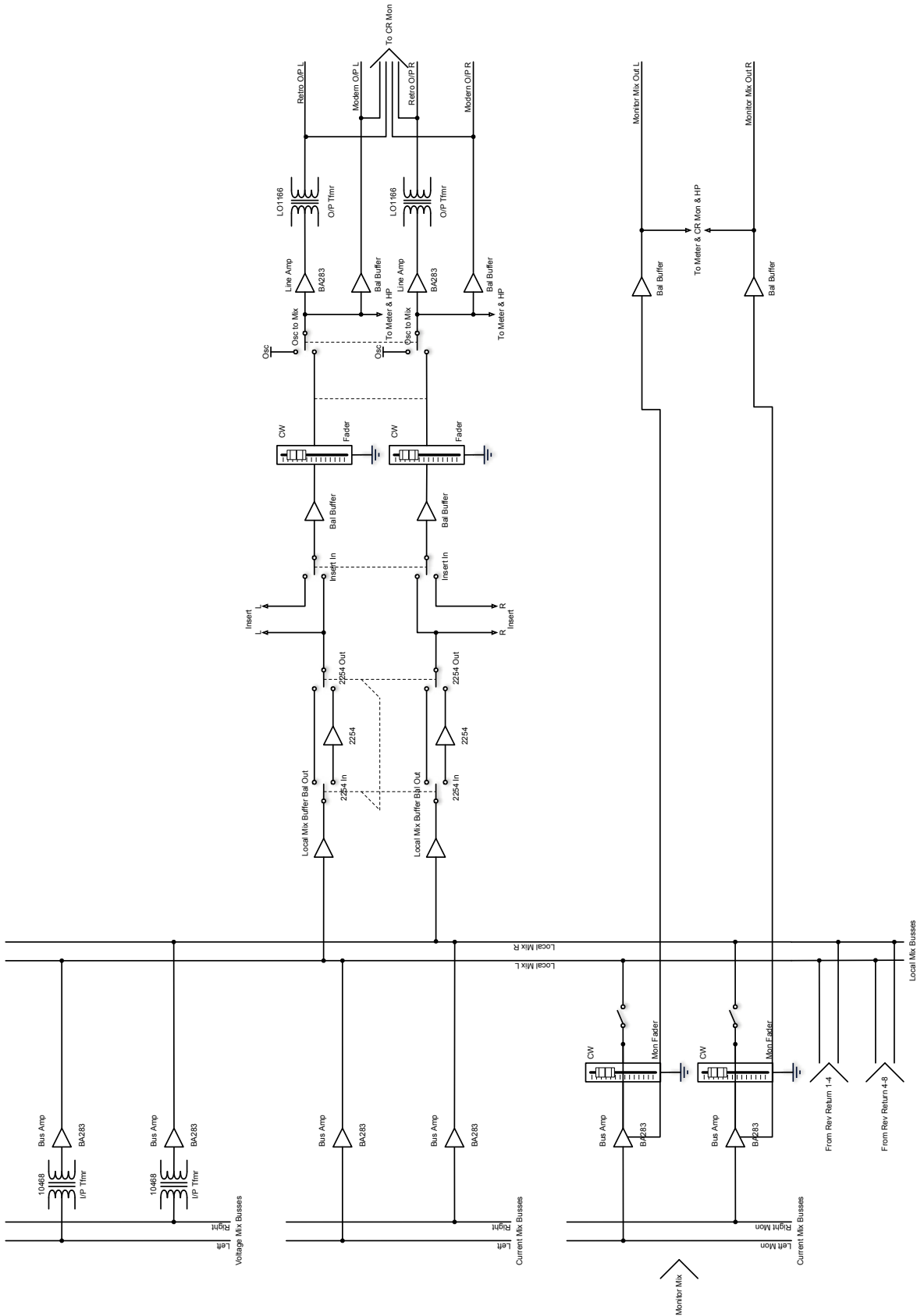
Title: Channel Module Block Diagrams		
Size: A3	Number: GroupAmps	Revision: A
File:		

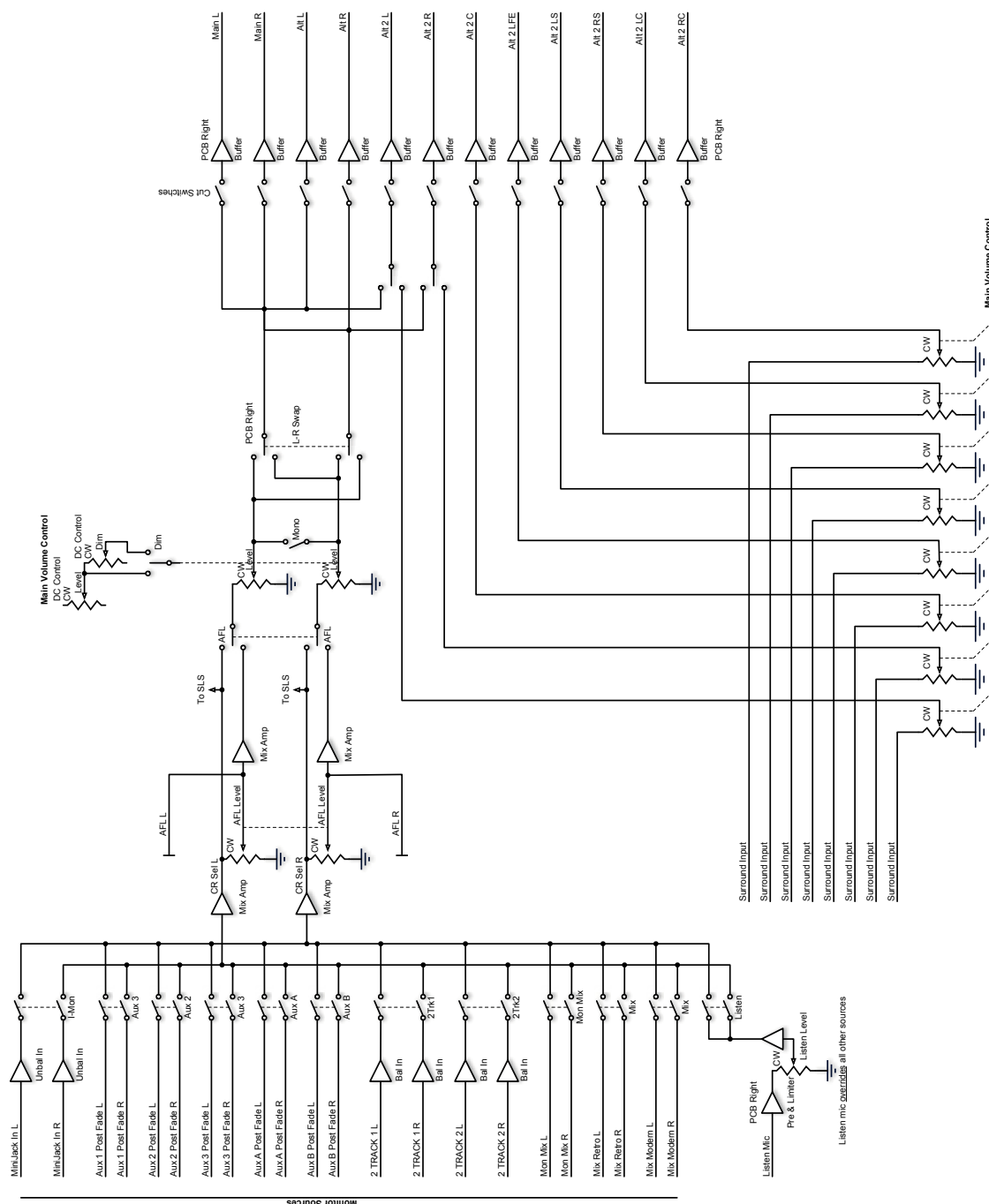


Group Mix Bus 1

Stereo Mix & Outputs

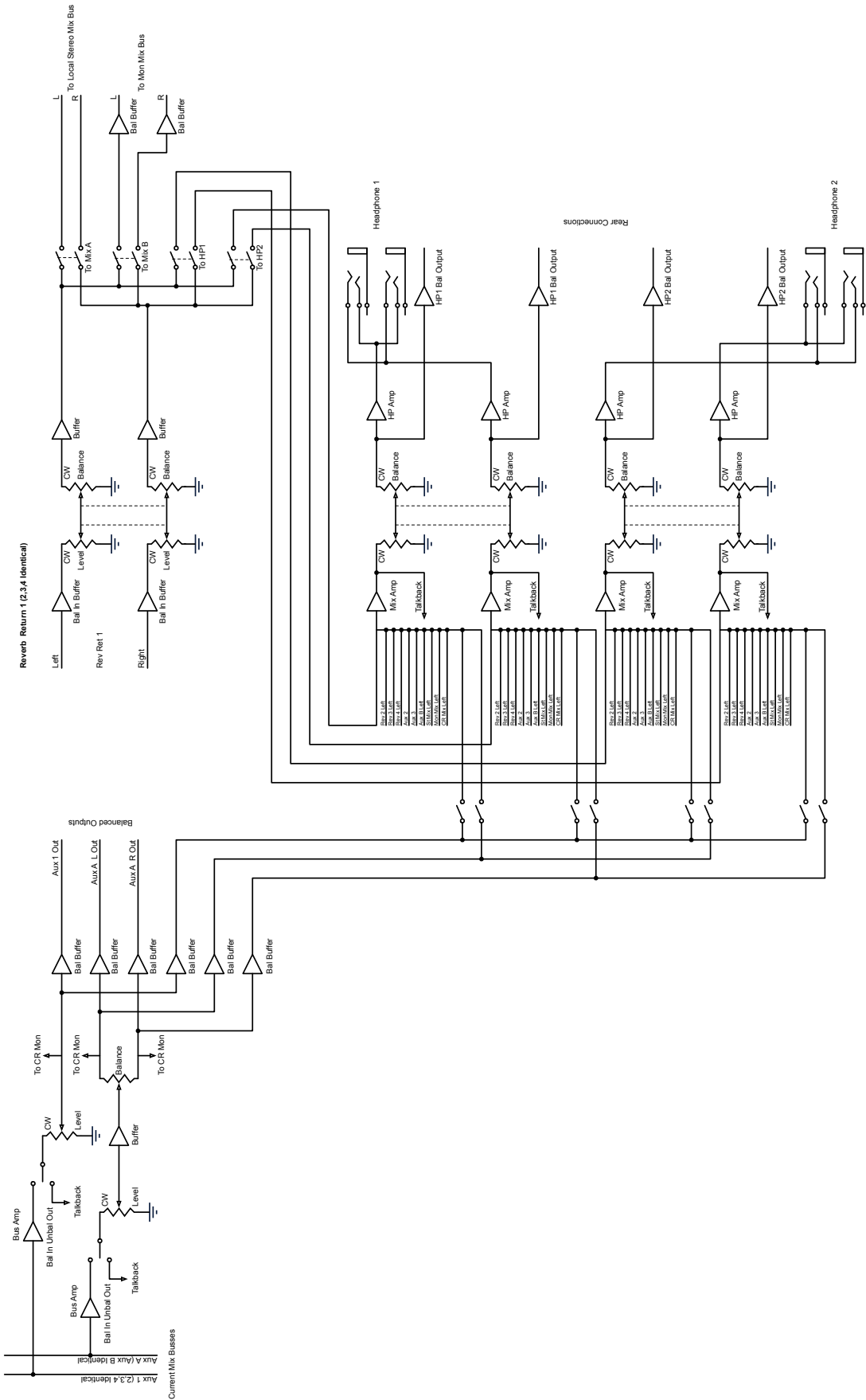
Title: Master Section Block Diagrams		
Size: A3	Number: Stereo	Revision: A
File:		



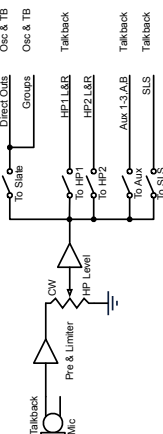
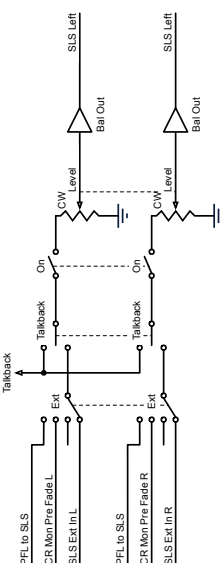
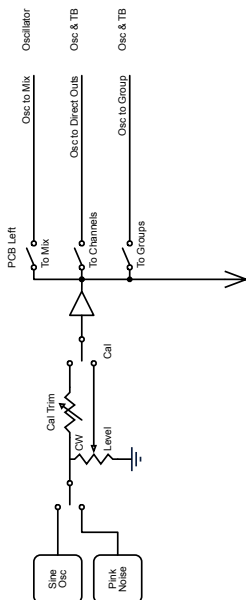
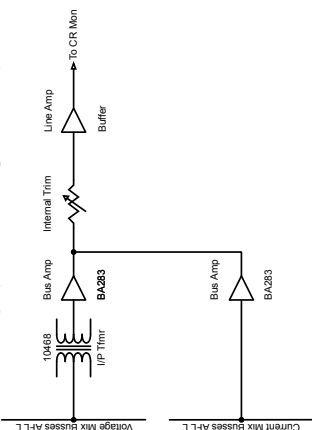


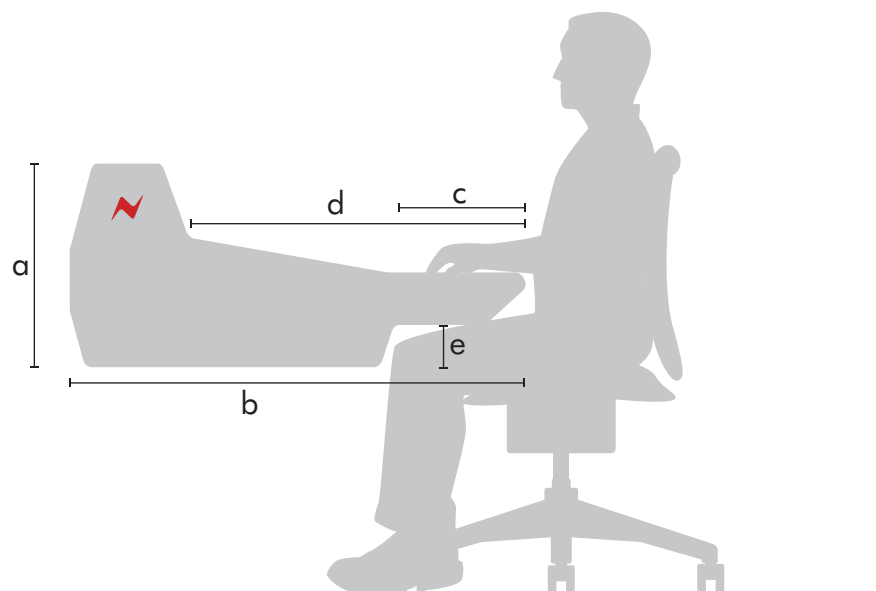
AUX Headphone & Stereo Returns

Title: Channel Module Block Diagrams		
Size: A3	Number: Aux HP Ret	Revision: A
File:		



Title: Channel Module Block Diagrams		
Size: A3	Number: Other Stuff	Revision: A
File:		





Dimensions

» a: 45cm b: 99cm c: 30.7cm d: 70.5cm e: 12cm

32 Channel Frame

- » Width: 167cm (65.75 in)
- » Depth: 99cm (38.98 in)
- » Height (without stand): 45cm (17.72 in)

24 Channel Frame

- » Width: 135cm (53.15 in)
- » Depth: 99cm (38.98 in)
- » Height (without stand): 45cm (17.72 in)

16 Channel Frame

- » Width: 102cm (40.16 in)
- » Depth: 99cm (38.98 in)
- » Height (without stand): 45cm (17.72 in)

Recall Sheets

The following pages contain printable Recall sheets for the Custom Series 75.

Notes:

1.59



Notes:

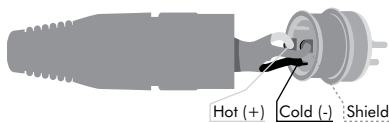
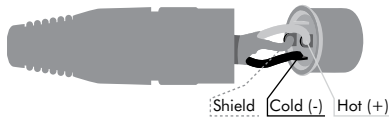
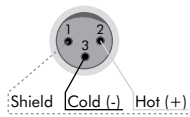
[illegible][illegible]

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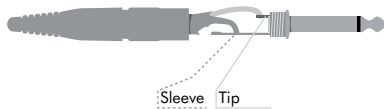
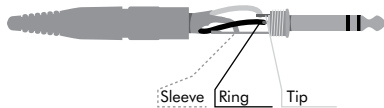
10	10	10	10	10	10	10	10
5	5	5	5	5	5	5	5
0	0	0	0	0	0	0	0
5	5	5	5	5	5	5	5
10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20
30	30	30	30	30	30	30	30
∞	∞	∞	∞	∞	∞	∞	∞

Wiring Diagrams

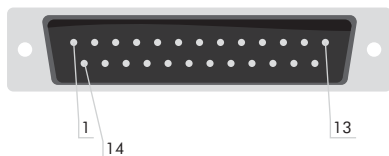
XLR Connectors



1/4" TRS & TS Connectors



DB25 Connectors



All DB25 connectors are wired with industry standard pinout & numbering. Each Channel Bin uses DB25 for Direct Out, Line In, DAW In, Insert Send & Insert Return.

Broadcast Users Note: Pin 13 of the DB25 is CHASSIS, whilst other 'earth' or 'ground' pins (25, 11, 22, 8, 19, 5, 16, 2) are connected to "0 Volts". Pin 13 can be used to connect to outer shield of cables with double shielding. Inside the console these 2 circuits are connected together at one place. Separately wiring the outer shield will reduce susceptibility to radio interference.

Master Section Rear Panel

7.1 Inputs

Naturally, the following labels are just a guide. Labels have not been added to the console, maintaining consistency between the 7.1 input wiring and the Surround Spk (Alt2) output wiring is the main consideration.

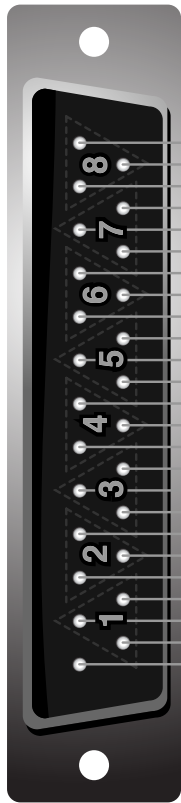
Pin #	Connection	Cable #
1	LFE +	8
14	LFE -	
2	0V	
15	Rs +	7
3	Rs -	
16	0V	
4	Ls +	6
17	Ls -	
5	0V	
18	R +	5
6	R -	
19	0V	
7	Rc +	4
20	Rc -	
8	0V	
21	C +	3
9	C -	
22	0V	
10	Lc +	2
23	Lc -	
11	0V	
24	L +	1
12	L -	
25	0V	
13	Chassis	

Surround Spk (Alt2)

As mentioned previously, the following labels are just a guide. Labels have not been added to the console, maintaining consistency between the 7.1 input wiring and the Surround Spk (Alt2) output wiring is the main consideration.

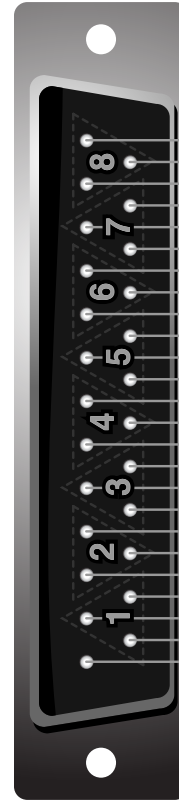
Pin #	Connection	Cable #
1	LFE +	8
14	LFE -	
2	0VS	
15	Rs +	7
3	Rs -	
16	0VS	
4	Ls +	6
17	Ls -	
5	0VS	
18	R +	5
6	R -	
19	0VS	
7	Rc +	4
20	Rc -	
8	0VS	
21	C +	3
9	C -	
22	0VS	
10	Lc +	2
23	Lc -	
11	0VS	
24	L +	1
12	L -	
25	0VS	
13	Chassis	

Reverb (Stereo) Returns



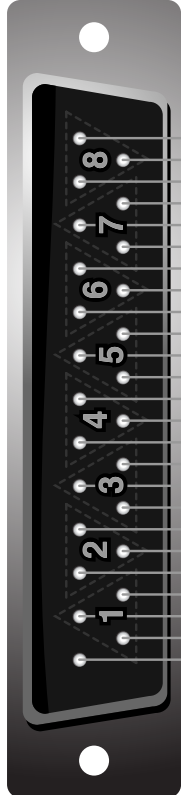
Pin #	Connection	Cable #
1	Ret+4R	8
14	Ret-4R	
2	0VR	
15	Ret+4L	7
3	Ret-4L	
16	0VR	
4	Ret+3R	6
17	Ret-3R	
5	0VR	
18	Ret+3L	5
6	Ret-3L	
19	0VR	
7	Ret+2R	4
20	Ret-2R	
8	0VR	
21	Ret+2L	3
9	Ret-2L	
22	0VR	
10	Ret+1R	2
23	Ret-1R	
11	0VR	
24	Ret+1L	1
12	Ret-1L	
25	0VR	
13	Chassis	

Aux Sends



Pin #	Connection	Cable #
1	Osc+	8
14	Osc-	
2	0V	
15	AUX Out BR+	7
3	AUX Out BR-	
16	0V	
4	AUX Out BL+	6
17	AUX Out BL-	
5	0V	
18	AUX Out AR+	5
6	AUX Out AR-	
19	0V	
7	AUX Out AL+	4
20	AUX Out AL-	
8	0V	
21	AUX Out 3+	3
9	AUX Out 3-	
22	0V	
10	AUX Out 2+	2
23	AUX Out 2-	
11	0V	
24	AUX Out 1+	1
12	AUX Out 1-	
25	0V	
13	Chassis	

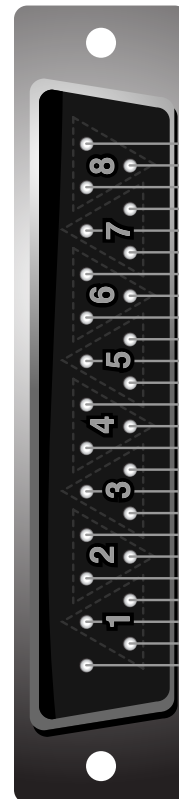
Speakers



Pin #	Connection	Cable #
1	Mon Mix Out R+	8
14	Mon Mix Out R-	
2	0V	
15	Mon Mix Out L+	7
3	Mon Mix Out L-	
16	0V	
4		6
17		
5	0V	
18		5
6		
19	0V	
7	Alt Spk1 R+	4
20	Alt Spk1 R-	
8	0V	
21	Alt Spk1 L+	3
9	Alt Spk1 L-	
22	0V	
10	Main Spk R+	2
23	Main Spk R-	
11	0V	
24	Main Spk L+	1
12	Main Spk L-	
25	0V	
13	Chassis	

SLS, Red Light, TB, Listen

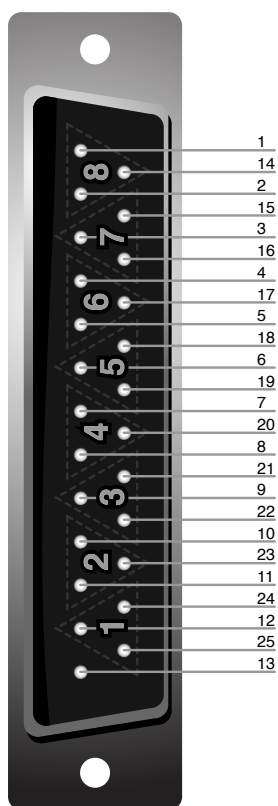
The Studio Red Light is to be connected to Channel 5, taking into consideration that this circuit is not suitable for mains power and should be run at 1 Amp 24 Volts.



Pin #	Connection	Cable #
1	PFL Out+	8
14	PFL Out-	
2	0V	
15	Listen Mic+	7
3	Listen Mic-	
16	0V	
4	Talkback Sw1	6
17	Talkback Sw2	
5	0V	
18	Red Light1	5
6	Red Light2	
19	0V	
7	Ext to SLS R+	4
20	Ext to SLS R-	
8	0V	
21	Ext to SLS L+	3
9	Ext to SLS L-	
22	0V	
10	SLS R+	2
23	SLS R-	
11	0V	
24	SLS L+	1
12	SLS L-	
25	0V	
13	Chassis	

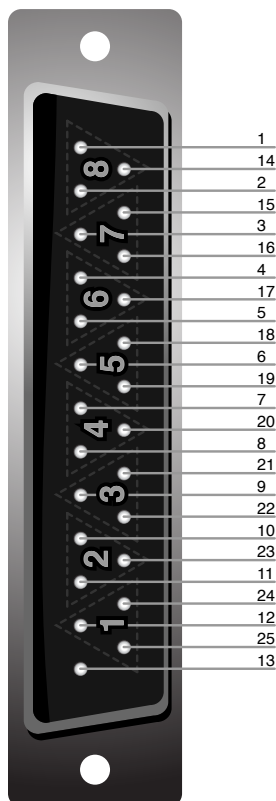
Headphones

Note: Unbalanced outputs are able to drive up to 10 headphones without the need for an external headphone amp, the balanced outputs will need to be connected to a headphone amp.



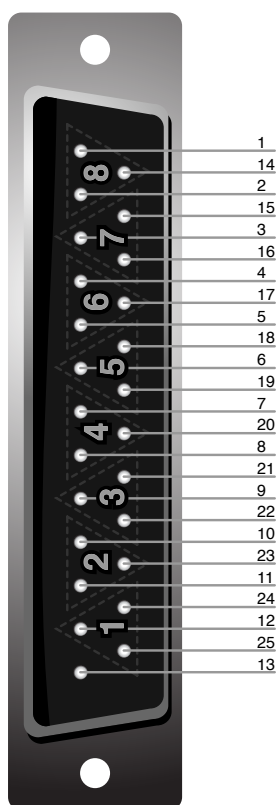
Pin #	Connection	Cable #
1		8
14		
2	0V	
15	HP2 R	7
3	HP2 L	
16	0VHP	
4	HP1 R	6
17	HP1 L	
5	0VHP	
18		5
6		
19	0V	
7	HP2 R+	4
20	HP2 R-	
8	0V	
21	HP2 L+	3
9	HP2 L-	
22	0V	
10	HP1 R+	2
23	HP1 R-	
11	0V	
24	HP1 L+	1
12	HP1 L-	
25	0V	
13	Chassis	

Mix Outs & 2254

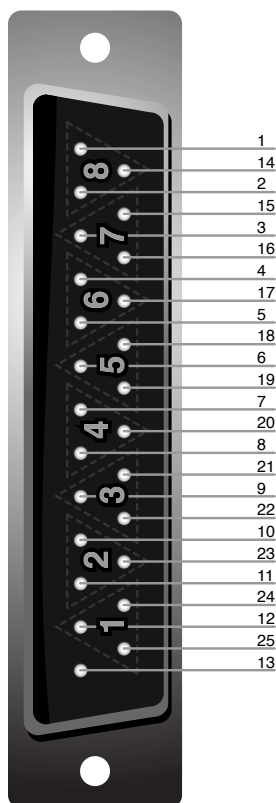


Pin #	Connection	Cable #
1	2254 In R+	8
14	2254 In R-	
2	0V	
15	2254 In L+	7
3	2254 In L-	
16	0V	
4	2254 Out R+	6
17	2254 Out R-	
5	0V	
18	2254 Out L+	5
6	2254 Out L-	
19	0V	
7	Retro R+	4
20	Retro R-	
8	0V	
21	Retro L+	3
9	Retro L-	
22	0V	
10	Modern R+	2
23	Modern R-	
11	0V	
24	Modern L+	1
12	Modern L-	
25	0V	
13	Chassis	

Mix Insert, 2 Trk 1,2

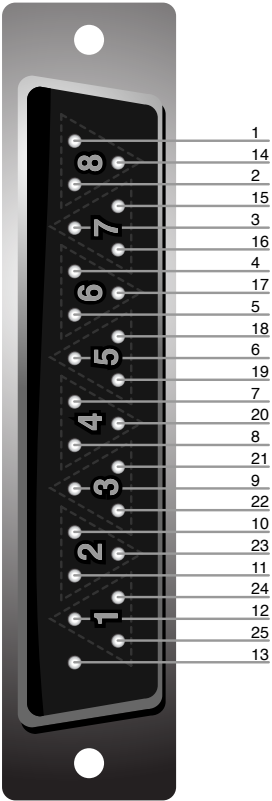


Pin #	Connection	Cable #
1	2Trk2 R+	8
14	2Trk2 R-	
2	0V	
15	2Trk2 L+	7
3	2Trk2 L-	
16	0V	
4	2Trk1 R+	6
17	2Trk1 R-	
5	0V	
18	2Trk1 L+	5
6	2Trk1 L-	
19	0V	
7	Ins Ret R+	4
20	Ins Ret R-	
8	0V	
21	Ins Ret L+	3
9	Ins Ret L-	
22	0V	
10	Ins Send R+	2
23	Ins Send R-	
11	0V	
24	Ins Send L+	1
12	Ins Send L-	
25	0V	
13	Chassis	



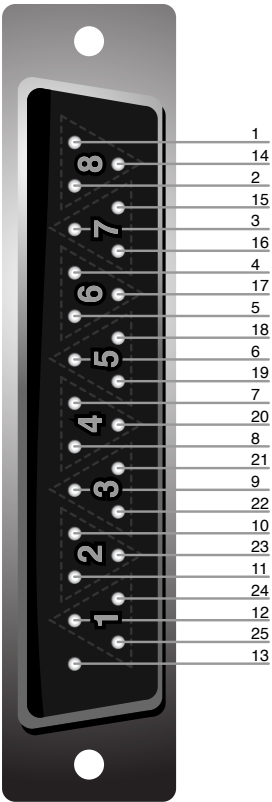
Pin #	Connection	Cable #
1	Grp +8	8
14	Grp -8	
2	0V	
15	Grp +7	7
3	Grp -7	
16	0V	
4	Grp +6	6
17	Grp -6	
5	0V	
18	Grp +5	5
6	Grp -5	
19	0V	
7	Grp +4	4
20	Grp -4	
8	0V	
21	Grp +3	3
9	Grp -3	
22	0V	
10	Grp +2	2
23	Grp -2	
11	0V	
24	Grp +1	1
12	Grp -1	
25	0V	
13	Chassis	

Stem Outputs



Pin #	Connection	Cable #
1	Stem +8	8
14	Stem -8	
2	0V	
15	Stem +7	7
3	Stem -7	
16	0V	
4	Stem +6	6
17	Stem -6	
5	0V	
18	Stem +5	5
6	Stem -5	
19	0V	
7	Stem +4	4
20	Stem -4	
8	0V	
21	Stem +3	3
9	Stem -3	
22	0V	
10	Stem +2	2
23	Stem -2	
11	0V	
24	Stem +1	1
12	Stem -1	
25	0V	
13	Chassis	

DAW/Ins Return

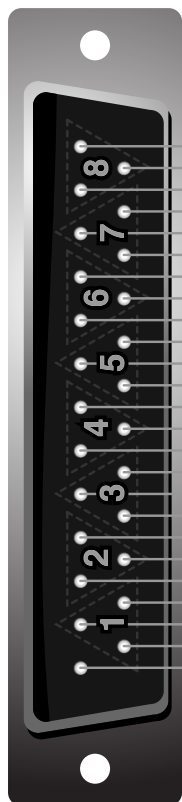


Pin #	Connection	Cable #
1	DAW +8	8
14	DAW -8	
2	0V	
15	DAW +7	7
3	DAW -7	
16	0V	
4	DAW +6	6
17	DAW -6	
5	0V	
18	DAW +5	5
6	DAW -5	
19	0V	
7	DAW +4	4
20	DAW -4	
8	0V	
21	DAW +3	3
9	DAW -3	
22	0V	
10	DAW +2	2
23	DAW -2	
11	0V	
24	DAW +1	1
12	DAW -1	
25	0V	
13	Chassis	

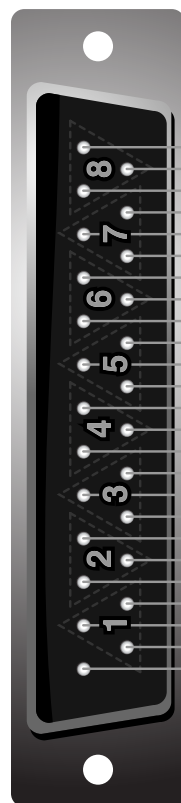
Channel Bin Rear Panel

DAW Inputs

Channel Insert Sends

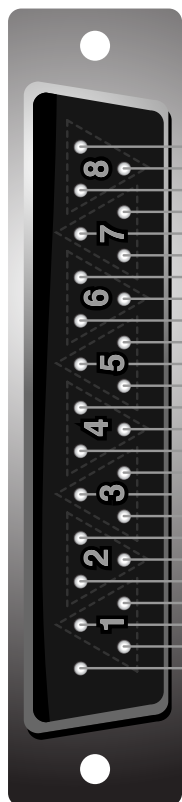


Pin #	Connection	Cable #
1	Snd +8	8
14	Snd -8	
2	0V	
15	Snd +7	7
3	Snd -7	
16	0V	
4	Snd +6	6
17	Snd -6	
5	0V	
18	Snd +5	5
6	Snd -5	
19	0V	
7	Snd +4	4
20	Snd -4	
8	0V	
21	Snd +3	3
9	Snd -3	
22	0V	
10	Snd +2	2
23	Snd -2	
11	0V	
24	Snd +1	1
12	Snd -1	
25	0V	
13	Chassis	

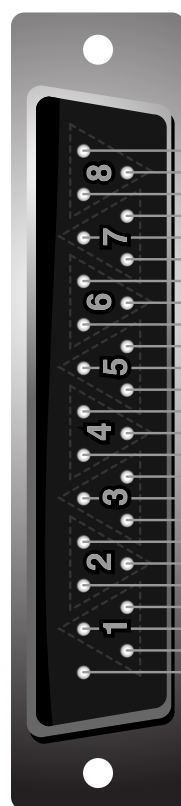


Pin #	Connection	Cable #
1	DAW +8	8
14	DAW -8	
2	0V	
15	DAW +7	7
3	DAW -7	
16	0V	
4	DAW +6	6
17	DAW -6	
5	0V	
18	DAW +5	5
6	DAW -5	
19	0V	
7	DAW +4	4
20	DAW -4	
8	0V	
21	DAW +3	3
9	DAW -3	
22	0V	
10	DAW +2	2
23	DAW -2	
11	0V	
24	DAW +1	1
12	DAW -1	
25	0V	
13	Chassis	

Channel Insert Returns

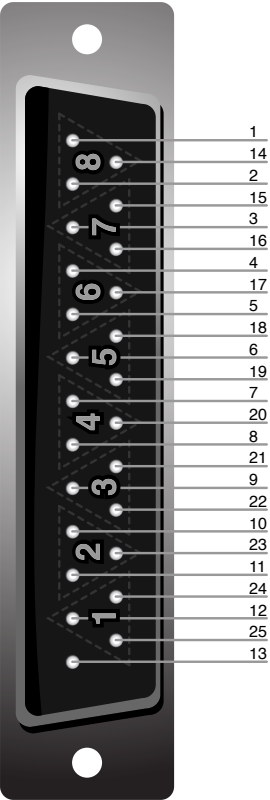


Pin #	Connection	Cable #
1	Ret +8	8
14	Ret -8	
2	0V	
15	Ret +7	7
3	Ret -7	
16	0V	
4	Ret +6	6
17	Ret -6	
5	0V	
18	Ret +5	5
6	Ret -5	
19	0V	
7	Ret +4	4
20	Ret -4	
8	0V	
21	Ret +3	3
9	Ret -3	
22	0V	
10	Ret +2	2
23	Ret -2	
11	0V	
24	Ret +1	1
12	Ret -1	
25	0V	
13	Chassis	



Pin #	Connection	Cable #
1	Line +8	8
14	Line -8	
2	0V	
15	Line +7	7
3	Line -7	
16	0V	
4	Line +6	6
17	Line -6	
5	0V	
18	Line +5	5
6	Line -5	
19	0V	
7	Line +4	4
20	Line -4	
8	0V	
21	Line +3	3
9	Line -3	
22	0V	
10	Line +2	2
23	Line -2	
11	0V	
24	Line +1	1
12	Line -1	
25	0V	
13	Chassis	

Direct Outputs



Pin #	Connection	Cable #
1	DIR +8	8
14	DIR -8	
2	0V	
15	DIR +7	7
3	DIR -7	
16	0V	
4	DIR +6	6
17	DIR -6	
5	0V	
18	DIR +5	5
6	DIR -5	
19	0V	
7	DIR +4	4
20	DIR -4	
8	0V	
21	DIR +3	3
9	DIR -3	
22	0V	
10	DIR +2	2
23	DIR -2	
11	0V	
24	DIR +1	1
12	DIR -1	
25	0V	
13	Chassis	

Glossary

Amplifying Stages

Each EQ band contains an amplifying stage. The mic pre contains two, as does the HPF. The original Neve BA338 amplifying stages have been tweaked to improve their drive ability and stability versus temperature, resulting in reduced distortion and approximately 9dB more dynamic range. As a further improvement to the original designs, each section of the 2081 channel module has its own power supply filtering.

Channel Bin

Front on, the Channel Bins of the *Custom Series 75* are almost indiscernible. However each group of eight 2081 channel modules are housed in an aluminum casing known as a 'bin'. Beneath this are the individual Channel Bin motherboards. From the rear, each bin can be seen clearly. Depending on the chassis size, there may be up to eight Channel Bins.

Current Summing

Current Summing is a modern solution to the 'deficiencies' of Voltage Summing. No matter how many signals you feed to the mix bus of a Current Summing circuit, the voltage on the bus will remain at 0 Volts. We call this a "Virtual Earth" - the inverted op-amp output voltage is 'fed back' to the virtual earth point via a feedback resistor, resulting in 0V at the op-amp input. A more sophisticated variant of this circuit is used to achieve balanced virtual earth mixing as used in this console. Due to the virtual earth, this design does not require an input or output transformer. A Current Summing Mix Bus does not colour the audio.

Modern Output Stage

The Modern Output Stage of the *Custom Series 75* has been designed for sonic transparency and excellent technical specification. It's a transformer-less balanced floating output, that can drive balanced or unbalanced professional grade studio equipment. All op amps are LM4562 by National Semiconductor, generally regarded as the best sounding opamp available.

All capacitors in the audio signal path (Modern & Retro) are WIMA polypropylene film or Rubycon ZLH electrolytic chosen for long life and superior sonic performance. All relays, switches and connectors in the audio signal path have gold plated contacts.

Retro Output Stage

The Classic Output Stage which was made famous by the Neve 1073, 1272 and 2254 could be described using words such as warm, defined and flattering. The only way to truly know is to listen. Circuitry wise, the sound is largely due to the BA283 output amplifier and L01166 output transformer. These two components, when used together, have a significant sonic effect.

Care has been taken to recreate the renowned Classic Output Stage for the *Series 75 Console*. The BA283X output stage, single ended, class A circuitry with a gapped core transformer, and the L01166 output transformer are as it was originally.

All capacitors in the audio signal path (Retro & Modern) are WIMA polypropylene film or Rubycon ZLH electrolytic chosen for long life and superior sonic performance. All relays, switches and connectors in the audio signal path have gold plated contacts.

Stem Outputs

A Stem is a sub-mix output. In music mixing, stems are more often stereo mixes of just the drums, guitars, or vocals etc. These can then be subsequently re-mixed together for a complete stereo mix. The *Series 75* Stem Outputs are post-fader, and may be used to record just the sub-grouped signals.

Voltage Summing

In the 1970s Voltage Summing was the only way to sum multiple signals onto a bus. Put simply, the signal level on the mix bus drops as more signals are fed to it, typically to around -30dbu. Further, the mix bus must be designed from the outset to have a fixed number of sources, and the impedance and bus level depends on this not changing. The signal passes through an input transformer and amplifying stage - the "mix amp". This input transformer will subtly colour the signal. Once the signal passes through the mix amp it hits an output transformer. The output transformer is where much of the sonic colour comes from. In effect, a Voltage Summing Mix Bus colours the audio in a way that is pleasing to our ear.

Credits

Tom Misner – Owner/Designer/Marketing

Bruce McBean - Design Team Leader

Stephen Crane - Mechanical Design

Grzegorz Rozek - Software Design

Rod Harris - Design Engineer

Murray Irvine - Design Engineer

Attila Acs – Website, Graphics & Photos

Dirk Terrill - Documentation

The Team wishes to thank the numerous people whose valuable suggestions and criticisms during the development of this console have helped to make it even better.